

# ***E*MPLOYEE *S*AFETY & *H*EALTH *M*ANUAL**



**ISSUED BY**

**COMMONWEALTH OF KENTUCKY  
TRANSPORTATION CABINET**

**JANUARY 2010**



Produced by Organizational Management Branch  
Office of Human Resource Management



Steven L. Beshear  
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Michael W. Hancock, P.E.  
Acting Secretary

OFFICE OF THE SECRETARY      105920  
OFFICIAL ORDER

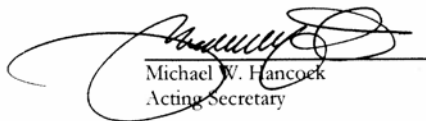
SUBJECT: *Employee Safety and Health Manual*

This manual has been prepared to provide information and guidance to personnel of the Kentucky Transportation Cabinet. Its purpose is to establish uniformity in the interpretation and administration of laws, regulations, policies, and procedures applicable to the operation of the Employee Safety and Health Branch and its relationship with other units of the Cabinet.

The policies and procedures set forth herein are hereby approved and declared effective unless officially changed.

All previous instructions, written and oral, relative to or in conflict with this manual are hereby superseded.

Signed and approved this 1<sup>st</sup> day of March, 2010.

  
Michael W. Hancock  
Acting Secretary

Approved as to Legal Form

Will Fogle 2-24-10  
Office of Legal Services



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**101 AUTHORITY & PURPOSE**

The Occupational Safety and Health Act and OSHA require employers to furnish employees a place of employment free from recognized hazards that are causing or likely to cause death or serious physical harm. The Commonwealth of Kentucky has adopted a State Plan OSHA program [the Kentucky Occupational Safety and Health (KOSH) Program ([KRS 338](#))] and is responsible for the enforcement of occupational safety and health standards in Kentucky. The KOSH Program incorporates by reference the safety and health standards promulgated in [29 CFR 1910](#) (General Industry) and [29 CFR 1926](#) (Construction).

To comply with [KRS 18A.110\(7\)\(i\)](#), the Secretary of the Personnel Cabinet promulgated [101 KAR 2:150](#), “State Safety Program,” for the development, operation, and enforcement of programs to improve work safety. The Personnel Cabinet’s *Commonwealth of Kentucky Safety and Health Manual* expresses and summarizes the state’s Safety and Health Program.

To comply with [101 KAR 2:150](#), the Transportation Cabinet (KYTC) assigns the Employee Safety & Health Branch the responsibility to develop, update, oversee, coordinate, evaluate, and administer the KYTC Safety and Health Program. The KYTC Safety and Health Program policy is established in the KYTC *General Administration and Personnel Manual* ([GAP-700](#)).

The intent of the KYTC *Employee Safety and Health Manual* is to familiarize employees with KYTC Safety and Health Program procedures and to emphasize their roles and responsibilities in the prevention of accidents and injuries.

The KYTC Safety and Health Program delegates Cabinet managers and supervisors the responsibility of implementing safety and health rules and regulations in their assigned areas.



**102 MANAGEMENT RESPONSIBILITIES**

KYTC management shall:

- Ensure that safety and health policies, procedures, goals, and objectives are effectively communicated to all affected employees
- Assure their actions abide by KYTC's Safety and Health Program
- Fairly and firmly enforce established policies and procedures by granting appropriate authority and responsibility, as deemed necessary to effectively manage the Safety and Health Program
- Hold supervisors and employees responsible and accountable for their actions and adherence to the Safety and Health Program
- Never direct or cause to be directed any activity, task, or operation known to be unsafe

**103 SUPERVISOR RESPONSIBILITIES**

Supervisors are designated as the competent persons to be responsible for worker safety within the activity area of any job site or work location and thus responsible for the assessment, selection, and use of appropriate personnel, equipment, and personal protective equipment.

Supervisors shall:

- Fully orient and instruct all employees in the Safety and Health Program and safe practices and procedures applicable to their assigned duties
- Adhere to safety policies and procedures and demonstrate safe actions and behaviors
- Never direct or cause to be directed any activity, task, or operation known to be unsafe

**103 SUPERVISOR RESPONSIBILITIES (CONT.)**

- Immediately take corrective action to prevent or prohibit reoccurrence of, or initiate such action as deemed necessary to correct, any unsafe act or condition reported or observed
- Implement the safety and health program within their area of responsibility
- See that employees obtain the necessary information and training to safely do their jobs, and give detailed instructions on safety procedures for the tasks being performed
- Report defective equipment to the appropriate authority

**Note:** No equipment is to be used when it is in such condition that it constitutes a hazard to any employee or to the public or when the continued use of the equipment may cause further damage to the equipment itself.

- Analyze and plan work in advance to determine the safest, most economical way to proceed and determine the physical protection necessary to do the work
- Select and assign workers sufficiently trained and qualified to do the job at hand in a manner that will be safe for employees and the public
- See that KYTC policies are followed at all times
- Report unsafe conditions through the chain of command and, if possible, correct them immediately
- Read and comply with the *Employee Safety and Health Manual*, and ensure that all supervised employees understand and adhere to safety and health requirements

**104 EMPLOYEE RESPONSIBILITIES**

**KRS 338.031** (b) states:

*Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this chapter which are applicable to his own actions and conduct.*

To fulfill assigned duties, employees shall:

- Comply with applicable occupational safety and health standards, policy, procedures, rules, and orders in the performance of their assigned duties
- Immediately report unsafe acts, unsafe conditions, incidents, and injuries to the responsible supervisor
- Never perform any activity, task, or operation known to be unsafe
- Adopt the recommended safe procedure as the best procedure and have regard at all times for the safety of fellow employees and the public
- Report unsafe equipment and working conditions to the immediate supervisor and/or to the safety representative
- Contribute ideas and suggestions for improved safety practices
- Wear required personal protective equipment for the job being performed
- Not engage in horseplay or any behavior that may result in injury
- Not be under the influence of or use drugs or alcohol
- Read and comply with the *Employee Safety and Health Manual* and all safety and health policies and procedures applicable to the work being performed
- Immediately report all accidents and injuries to their immediate supervisor
- Attend mandatory safety training



**201 KYTC SAFETY & HEALTH POLICY**

KYTC fully subscribes to the “Occupational Safety and Health Act of 1970” (Act) as it is adopted in [KRS Chapter 338](#) and the Kentucky Administrative Regulations issued pursuant thereto, as well as Title [101 KAR 2:150](#) – “State Safety Program.” KYTC through the exercise of its powers shall assure, so far as possible, every Cabinet employee a safe and healthful workplace free from recognized hazards that are causing or likely to cause physical harm. The rights and duties of employers and employees as described in the Act shall henceforth become a part of the rules, policy, and procedures of the Cabinet.

KYTC will pursue a vigorous and diligent effort to achieve full compliance with the Act and will commit such resources as required to fully perform the duties and responsibilities set forth and assigned pursuant to the Act, as well as, conduct all operations in a manner conducive to assuring employee safety and health.

Employees are guaranteed the exercise of their rights under the Act without being subjected to any retaliation whatsoever and are afforded the opportunity to participate fully in the KYTC Safety and Health Program.

**202 EMPLOYEE SAFETY & HEALTH BRANCH MISSION**

The Employee Safety and Health Branch mission is to promote and provide timely expert occupational safety and health assistance, leadership, and guidance to ensure, as far as possible, a safe and healthy work environment for all Transportation Cabinet employees in their endeavor to maintain and improve the Commonwealth’s transportation infrastructure.

The branch’s objectives are to develop and implement efficient safety and health management systems that foster productive and cooperative programs, policies, training, and employee development and to ensure that KYTC workplaces are free from recognized hazards and behaviors that cause, or are likely to cause injuries, illnesses, or damage to property.

**203    PROGRAM PRINCIPLES**

The guiding principle elements of the KYTC Safety and Health Program are based on OSHA's ["1989 Occupational Safety and Health Program Management Guidelines"](#) and are incorporated herein by reference. The principle elements include but are not limited to:

- Management Leadership and Commitment
- Employee Involvement and Participation
- Workplace Analysis
- Hazard Prevention and Control
- Safety and Health Training



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**301 GENERAL INFORMATION**

Every work-related personal injury or illness shall be reported immediately to the supervisor or as soon as physically able to do so.

The supervisor shall provide an [IA-1 form, \*Workers Compensation–First Report of Injury or Illness\*](#), to the employee to complete or assist in completing. The employee is to complete the IA-1 form in detail and then return it to the supervisor. If unable to do so, the supervisor shall complete the form for the employee's signature.

The supervisor shall send the form to the assigned district OSHA record keeper who shall provide a copy to the district safety coordinator and shall submit all required documents to the Central Office workers' compensation coordinator within 72 hours from the time of the incident's initial reporting. The district OSHA record keeper shall record the injury or illness in the OSHA log.

The [General Administration & Personnel Manual](#) details the administrative procedures for reporting injuries (**GAP-704-1**) and the workers' compensation policies and procedures (**GAP-404**).

**302 SERIOUS INJURY OR FATALITY**

Notification of the death, hospitalization, amputation, or other serious injury of a Cabinet employee shall be immediately made to the Office of Human Resource Management, Employee Safety and Health Branch via telephone **(502) 564-6963**, email, or fax **(502) 564-6683**. The district safety coordinator shall also be notified. The information shall include:

- Employee's name
- Position classification
- Current address
- Details surrounding the incident and the location

**DO NOT** delay reporting even if all the information is not readily available.

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**302    SERIOUS INJURY OR FATALITY (CONT.)**

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Upon receipt of the notification of a fatality or hospitalization, a representative of the Employee Safety and Health Branch shall notify the Kentucky OSH Program within eight hours. The district safety coordinator shall initiate an investigation of the incident and report their findings to the Employee Safety and Health Branch.

Supervisors shall be aware of any additional reporting requirements. For example, certain accidents on federally funded projects require FHWA notification, as detailed in the *KYTC Construction Manual* ([CST-113](#)).



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**401 GENERAL INFORMATION**

All incidents involving Cabinet vehicles or equipment (including leased vehicles and equipment) shall be reported on a [KSP 232 form, Kentucky Civilian Traffic Collision Report](#). This form shall contain correctly outlined details of the incident in a statement by the person involved. If that person cannot give a written statement, the supervisor shall complete the form in the involved person's own wording. The completed form shall be forwarded to the district equipment supervisor or appropriate division director, who will forward a copy to the Office of Legal Services. A copy also shall be given to the safety specialist/coordinator for investigation.

**Reference:** The [General Administration & Personnel Manual](#) and the [Equipment Manual](#) provide more information regarding incident reporting and additional requirements.

**402 SERIOUS VEHICLE OR EQUIPMENT INCIDENT**

If any Cabinet employee operating state equipment or state vehicle is involved in an incident resulting in serious injury, property damage, or fatality to another party, the responsible district, office, or division shall immediately notify the Employee Safety and Health Branch. In the districts the safety specialist/coordinator shall also be notified.

A safety specialist, safety coordinator, or safety administrator will promptly investigate the incident and report findings to their manager and the individual's chain of command.





**501 INTRODUCTION**

The Employee Safety and Health Branch shall approve the purchase of all personal protective equipment (PPE) to ensure items meet OSHA requirements, work requirements, and KYTC specifications.

**Note:** Supervisors are hereby designated as the competent person to be responsible for worker safety within the activity area of any job site and thus responsible for the assessment, selection, and use of appropriate PPE.

KYTC safety personnel shall conduct job hazard analyses of specific tasks being performed to determine the appropriate PPE necessary for the work to be performed and shall certify the assessment in writing. When working with hazardous chemicals, protective equipment identified in the Material Safety Data Sheet shall be utilized.

All personnel are required to follow the Cabinet policy requiring the proper use of all safety equipment including PPE. Any deviation from the policy may result in disciplinary action.

Employee-owned PPE shall be evaluated and approved by KYTC safety personnel prior to use in the workplace.

**502 HEAD PROTECTION**

Regardless of their positions or work locations, all KYTC employees engaged in any work, outdoors or indoors, where there is a possible danger of head injuries (from impact, from falling or flying objects, from electrical shock or burns, etc.) shall be required to wear hard hats at all times.

Hard hats shall meet applicable ANSI standards for work being performed.

Other “hi-vis” headwear (such as caps and hats) shall meet the full requirements of ANSI/ISEA standard 107-2004, or equivalent revisions, and may be utilized in outdoor/indoor work where the hazard of head injuries does **NOT** exist.

**502 HEAD PROTECTION (CONT.)**

This safety headwear is specifically designed to provide employees high visibility in areas where they are potentially exposed to the risk of moving vehicles, equipment, and traffic. Although "hi-vis" (or such headwear) shall **NOT** be utilized as replacement for hard hats where required. Such "hi-vis" headwear shall be worn by all employees working in traffic-control flagging operations, within the right-of-way limits, or in other areas where they are potentially exposed to the risk of moving vehicles, equipment, or roadway traffic.

**503 WELDING HELMETS**

Helmets are required while welding or when inspecting welding on construction sites. Filter lenses and plates shall be chosen in accordance with the welding operation. The chart below is a guide for the proper shade numbers.

<b>WELDING OPERATION</b>	<b>SHADE #</b>
Shielded metal- arc welding: 1/16", 3/32", 1/8", 5/32" electrodes	10
Gas- shielded arc welding (nonferrous): 1/16", 3/32", 1/8", 5/32" electrodes	11
Gas- shielded arc welding (ferrous): 1/16", 3/32", 1/8", 5/32" electrodes	12
Shielded metal- arc welding: 3/16", 7/32", 1/4" electrodes	12
Shielded metal- arc welding: 5/16", 3/8" electrodes	14
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1"	3 or 4
Medium cutting, 1" to 6"	4 or 5
Heavy cutting, 6" and over	5 or 6
Gas welding (light) up to 1/8"	4 or 5
Gas welding (medium) 1/8" to 1/2"	5 or 6
Gas welding (heavy) 1/2" and over	7 or 8

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**504 EYE PROTECTION**

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Appropriate eye protection shall be used by employees exposed to eye hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

All supervisors shall be responsible for obtaining the necessary quantity of eye protection devices and for enforcing the wearing of eye protection when it is required. Supervisors shall contact their employee safety and health representative with questions regarding eye protection selection.

Appropriate eye protection shall be worn as follows:

**Safety Spectacles—ANSI Z-87**

Safety spectacles protect against straight-on impact. Employees shall wear safety spectacles when engaged in grinding, machining, woodworking, chipping, chiseling, post driving, jackhammering, concrete cutting, cutoff sawing, chain sawing, drilling, or any other tasks where there is a potential hazard from flying objects or particles. Safety spectacles are not appropriate protection for nuisance dust, rust particles, light, radiation, or other particulates.

- Regular scratch-resistant prescription spectacles do not provide impact resistance.
- Side-shield protection is required.
- Over-the-Glasses (OTGs) glasses are available for workers who wear prescription eyewear and need impact eye protection.

**Goggles**

Appropriate goggles shall be worn when hazards include nuisance dust, rust particles, light radiation, sand, glass beads, sprays and mists, chemicals, or other particulates.

**504 EYE PROTECTION (CONT.)**

Four basic goggle types are:

- **Impact goggles** have perforated holes in the side with direct ventilation.
- **Chemical goggles** have passive vents with indirect ventilation.
- **Ventless goggles** eliminate entry of contaminants.
- **Cutting goggles** protect against harmful light and radiation.

**505 FACE PROTECTION**

Face shields are required when employees are using a battery charger, handling corrosives, pouring chemicals, or performing any other activities that necessitate use of full-face protection.

Face shields protect the face and do not provide eye protection from impact. Eye protection, if required, shall be worn under the face shield.

Chain saw operators shall wear a mesh face shield to protect from flying wood chips.

**506 RESPIRATORY PROTECTION**

KYTC will provide respirators, including disposable types, to employees exposed to breathing air contaminated with harmful dusts, fogs, mists, fumes, gases, smokes, sprays, or vapors. The selection of the appropriate respirator shall be made based upon the hazard encountered and in accordance with applicable OSHA standards and the KYTC's respiratory protection program.

Where disposable respirators are used but not required, respirator users shall be provided information from [29 CFR 1910.134, Appendix D, "Information for Employees Using Respirators When Not Required Under the Standard."](#)

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**506 RESPIRATORY PROTECTION (CONT.)**

Where respirator use is required, all applicable provisions of the KYTC respiratory protection program shall be met. These provisions include, but are not limited to, selection, medical evaluation, fit testing, use, cleaning, storage, and training. Supervisors should contact the designated respirator program coordinator with questions regarding respiratory protection.

**Note:** All of the provisions above shall be met **before** an employee is permitted to wear a respirator.

**507 LIFE JACKETS (PERSONAL FLOTATION DEVICES)**

Life jackets shall be worn by employees working in an area where a fall into water and danger of drowning exist, except when a fall-arrest system incorporates a 100 percent tie-off rule. Life jackets shall be Coast Guard-approved.

**508 HAND PROTECTION**

- **Rubber gloves** shall be provided for handling certain types of chemicals and acids.
- **Other types of chemical-resistant gloves** shall be purchased for handling pesticides and other chemicals as required by their specific Material Safety Data Sheets or product labels. For further questions, contact your employee safety and health representative.
- **Welder's gloves** shall be worn by employees who are cutting, welding, or conducting other such operations.
- **Impermeable gloves** shall be worn by employees while working with certain types of solvents. Since these are not a stocked item, they must be purchased locally.
- **Disposable vinyl/nitrile gloves** shall be worn when providing first aid, cleaning rest rooms, picking up litter or dead animals, or performing other activities where direct contact is undesirable.
- **Leather gloves** shall be worn by employees exposed to hand hazards.

**509 WORKER SAFETY APPAREL**

Retroreflective vests or other approved high-visibility ("hi-vis") safety apparel (meeting the requirements of ANSI/ISEA "American National Standard for High-Visibility Safety Apparel," or equivalent revisions, and labeled ANSI 107-2004, or equivalent revisions; standard performance for Class 2 or 3 risk exposure) shall be worn by all employees working in traffic-control flagging operations, within the right-of-way limits, or in other areas where they are potentially exposed to the risk of moving vehicles, equipment, or roadway traffic.

**Note:** Supervisors are designated as the competent person to be responsible for worker safety within the activity area of any job site and thus responsible for the assessment, selection, and use of appropriate safety apparel.

**"Class 3" apparel is recommended for nighttime operations and required for nighttime flagging.**

**510 HEARING PROTECTION**

Appropriate hearing protection shall be worn in accordance with OSHA standards. Hearing protection is required when operating chain saws, mowers, weed eaters, chippers, jack hammers, cut-off saws, or other hand tools and equipment where noise levels exceed 85 dba (decibels).

**511 FOOT PROTECTION**

All employees engaged in field activities shall, as a minimum, wear leather-upper work shoes. When working in areas or performing tasks where there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole, or where employees feet are exposed to electrical hazards employees shall utilize protective footwear that complies with ANSI – Z 41 and ASTM requirements.

Evaluation of routine field tasks of maintenance, traffic, and construction personnel indicate that one or more of the above hazards exist on a recurring basis, thus protective footwear is required.

**512 RUBBER APRONS & BOOTS**

Rubber aprons shall be available for use with corrosive chemicals including, but not limited to, solvents and acids.

Rubber boots shall be worn as required by the Material Safety Data Sheet when employees are mixing and applying pesticides.

**513 SNAKE-PROOF LEGGINGS**

Leggings or other protective equipment for the prevention of snakebites shall be provided to employees as needed.

**514 CLOTHING/ATTIRE**

Appropriate clothing and attire shall be worn to provide protection from sunburn, burns, insects, and poisonous plants and measured protection from injuries. This shall include, but is not limited to long pants and shirts or blouses covering the shoulders and midriff.

**515 CHAIN SAW CHAPS**

Chain saw chaps shall be worn by employees whenever operating a chain saw.

**516 FALL PROTECTION DEVICES**

All employees exposed to a potential fall to the ground or lower level of 4 feet or more shall be protected by OSHA-standard guardrails, safety nets, or personal fall-arrest systems.

All employees who might be exposed to fall hazards shall receive training and refresher training as required. This training shall be conducted by qualified personnel.

Harnesses, lanyards, and similar devices shall meet ANSI criteria and testing.

**516 FALL PROTECTION DEVICES (CONT.)**

Lanyards shall be equipped with shock absorbers when being utilized as part of a fall arrest system.

For the fall-protection policy, see [SAFE-2400](#).

**517 WELDING, CUTTING, & BRAZING**

All employees exposed to hazards created by welding, cutting, and brazing shall be protected by appropriate welding attire (such as tinted welding helmets, welding gloves, smocks, aprons, etc.) to ensure protection for face, eyes, hands, and torso.





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**601 GENERAL INFORMATION**

Emergency action and fire prevention and protection are the responsibilities of all employees. Every employee shall be made aware of evacuation procedures and of the locations of fire extinguishers, alarms, and exit routes in both familiar and nonroutine work areas. KYTC facilities shall include procedures for emergency evacuation and for reporting fires in their emergency action plans.

All supervised employee alarm systems shall be tested at least annually for reliability and adequacy. Fire and tornado drills shall be conducted at least annually to ensure emergency procedures and systems are adequate and effective.

**602 EMERGENCY ACTION PLAN**

Each facility is responsible for developing and implementing emergency procedures in accordance with local, state, and federal laws. These emergency procedures shall be included in a written emergency action plan and available to all employees for their review. The *General Administration & Personnel Manual (GAP-706-1)* details the requirements for an emergency action plan and includes the plan for the Transportation Cabinet Office Building (TCOB) (**GAP-707**).

Employees shall be made aware of the content of the plan and procedures. An adequate number of employees at every facility shall be trained and designated to assist in a safe and orderly evacuation of other employees to a safe area.

Pursuant to [29 CFR 1910.38](#), the minimum elements of the emergency action plan procedures shall include:

- Procedures for reporting a fire or other emergency
- Procedures for emergency evacuation, including type of evacuation and exit routes
- Procedures to account for evacuated persons

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**602    EMERGENCY ACTION PLAN (CONT.)**

- Procedures to be followed by employees who are trained as first aid responders that may provide care during an emergency
- A method to review the plan with all persons covered by the plan and additional training when an employee's responsibility under the plan changes or the plan changes

**603    FIRE PREVENTION**

Good housekeeping by all employees and regular fire inspections by designated personnel are necessary for the elimination of potential fire hazards.

- Some fire hazards include:
  - ◆ Spontaneous combustion hazards such as oily and greasy rags not in approved containers
  - ◆ Accumulation of rubbish or trash
  - ◆ Open containers of flammable liquids
  - ◆ Flammable materials near heating devices
  - ◆ Material stacked closer than 18 inches to sprinkler heads
  - ◆ Welding areas without portable fire extinguishers
  - ◆ Overloaded electrical circuits
  - ◆ Open electrical panels
  - ◆ Broken plugs, switches, and outlets and exposed wiring
  - ◆ Misuse of flammable liquids
  - ◆ Misuse of matches and cigarettes
- Where flammable liquids are openly handled, **NO SMOKING** signs shall be posted.

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**603 FIRE PREVENTION (CONT.)**

- Vehicles shall be turned off while filling fuel tanks.
- Overflow or spills when filling fuel tanks shall be immediately cleaned using proper spill cleanup procedures identified in the MSDS.
- Gasoline shall never be used as a cleaning agent.
- All equipment carrying large amounts of flammable liquids (such as paint-stripping vehicles, oil distributors, refueling trucks, etc.) shall be equipped with appropriate fire extinguishers.
- Approved ventilation systems shall be used, where provided, to prevent accumulation of gases or vapors sufficient to cause flash fire or explosion.
- Full oxygen cylinders shall not be stored close to full acetylene cylinders in buildings, unless separated by a fire-retardant wall or by a distance of 20 feet.
- Compressed gas cylinders shall not be stored near heat or open flames.
- All gas cylinders shall be stored capped, secured, upright, and protected from physical damage.
- Propane cylinders shall not be stored indoors. Full or empty cylinders shall be stored outdoors, secured, upright, and protected from physical damage.

**604 FIRE PROTECTION**

- Fire extinguishers shall be maintained in a fully charged and operable condition and kept in designated places at all times.
- Designated persons shall visually inspect all fire extinguishers in their assigned areas and vehicles on a monthly basis.

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**604 FIRE PROTECTION (CONT.)**

- Fire extinguishers within facilities shall not be obstructed and have a minimum circumference clearance of 36 inches.
- Extinguishers within facilities shall be mounted at reasonable height but not over 5 feet above floor and shall not be stored on the floor.
- Travel distance to fire extinguishers shall not exceed 50 feet.
- Employees shall be aware of various types of fires that might occur within work area or work location.
- Employees shall be familiar with various types of extinguishers and their operation.
- Extinguishers are made available in all facilities for employees to utilize in the event of incipient stage fires or for escape routes that may become blocked by fire.
- Only trained and designated persons shall utilize fire extinguishers for firefighting beyond incipient stage fires.
- Areas leading to sprinklers, valves, exit doors, and extinguishers shall be kept clear.
- Exit doors shall not be locked or inoperative while building is occupied.
- The local fire department's number and other emergency numbers shall be posted near telephones at all times.
- All welding, torch cutting, and brazing operations performed within structures shall have a fire watch and extinguisher posted for the duration of the operation.



## 701 GENERAL INFORMATION

Pursuant to Kentucky Occupational Safety and Health regulations, the Cabinet must have an accident prevention tag system (red tag system).

The purpose of the red tag system is to remove faulty or damaged equipment from service, preventing injuries to both state employees and the public as well as financial loss to the state.

The following information shall be entered on any tag affixed to state equipment:

- State inventory/equipment number
- Type of equipment
- Reason for tagging
- Signature of person completing tag
- Date

**DANGER**

**DO  
NOT  
OPERATE**

SIGNED BY \_\_\_\_\_ DATE \_\_\_\_\_

RELEASED BY \_\_\_\_\_ DATE \_\_\_\_\_

**DANGER**

**DO NOT REMOVE  
THIS TAG**

\_\_\_\_\_  
STATE NO.

\_\_\_\_\_  
TYPE OF EQUIPMENT

\_\_\_\_\_  
REASON FOR TAGGING

**SEE OTHER Side**

The supervisor responsible for the equipment shall be notified of the equipment tagged out of service and have the equipment repaired, replaced, or maintained out of service until repairs are made by qualified personnel.

**701 GENERAL INFORMATION (CONT.)**

Tags shall only be removed once appropriate repairs have been made and the person placing the tag has inspected the equipment to be placed back into service. The safety inspector placing the tag is the only person authorized to remove the tag allowing it to return to service.



**801 INTRODUCTION**

The purpose of the hazard communication standard is to ensure that hazards of all chemicals produced or imported are evaluated and that information concerning their hazards is transmitted to employers and employees. This transmittal of information shall be accomplished by means of comprehensive hazard communication programs that are to include container labeling and other forms of warning, material safety data sheets, and employee training.

The facility's supervisor, or designee, is responsible for maintaining the facility hazard communication written program.

**802 WRITTEN PROGRAM**

Each facility shall develop, implement, and maintain a written hazard communication program at each workplace. Employee safety and health personnel can assist in the evaluation and development of a facility's written program.

**803 CONTAINER LABELING**

Each facility shall ensure that each container of hazardous chemicals is properly labeled, tagged, or marked with the identity of the hazardous chemical contained therein and include appropriate hazard warnings (or alternative words, pictures, symbols, or combination thereof) that provide at least general information regarding the hazards of the chemical.

**804 MATERIAL SAFETY DATA SHEETS (MSDS)**

- Each facility shall be responsible for verifying that all hazardous chemicals entering the facility are listed in the current written chemical inventory and are accompanied by applicable material safety data sheets.
- Copies of the required material safety data sheets shall be maintained in the workplace and shall be readily accessible to employees during each work shift.

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**804 MATERIAL SAFETY DATA SHEETS (MSDS) (CONT.)**

- Both an active and inactive file of MSDS shall be maintained at each facility and MSDS for every hazardous chemical shall be maintained on file for 30 years following the final date of chemical use.
- Chemical manufacturers are required to provide MSDS upon request.
- Any vehicle carrying hazardous chemicals shall have a copy of appropriate MSDS.

**805 TRAINING**

- Each facility shall provide employees with effective information and training on all hazardous chemicals in the work area at time of initial assignment and whenever a new physical or health hazard is introduced.
- Training shall include coverage of the facility's hazard communication program and review of the applicable active MSDS.
- All training shall be documented and shall be kept on file.
- Employee safety and health personnel can assist in providing employee training.





**901 INTRODUCTION**

Each facility shall have a written emergency action plan (as detailed in the [General Administration & Personnel Manual](#), **GAP-706-1**). Supervisors shall make employees aware of the content of the plan and procedures.

**902 HOUSEKEEPING**

- Keep work areas clean and orderly. Keep aisles, corridors, and stairways clear at all times.
- Always stack material in a manner so that it cannot fall or easily be knocked over. Windowsills, ledges, and tops of cabinets shall be kept free of heavy objects.
- Spilled liquids shall be cleaned up immediately.
- Tripping hazards, exposed nails, loose flooring, raised edgings, splinters, faulty treads or mats, and cords in walkways shall be corrected immediately or reported to the appropriate supervisor for repair.

**903 PROPER USE OF OFFICE EQUIPMENT & FURNITURE**

- Equipment shall only be utilized for its intended purpose.
- Bottom drawers of file cabinets should carry the heaviest loads. Open and close file drawers by using handles. Only one file drawer at a time should be opened. All desk and file drawers shall be closed when not in use.
- Chairs, desks, tables, and cabinets shall not be used for climbing or reaching overhead objects.
- Keep fingers away from point of operation of such tools as staplers, punches, and paper cutters.
- Keep all machine safety guards in proper position in locked position when not in use.
- Sharp objects shall be kept in front part of desk drawers where readily visible.

**904 ELECTRICAL ITEMS**

- Machines with belts, gears, pulleys, or rotating parts shall be properly guarded and not cleaned while operating.
- Electrical cords shall be kept in good repair. Cords with frayed insulation or broken ground prongs shall be replaced. Plugs shall be totally enclosed to prevent shock. Extension cords shall be used only in accordance with the rating on the plug.
- Only trained and authorized personnel shall attempt to repair or adjust electrical equipment.



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**1001 HOUSEKEEPING**

Good housekeeping is essential to maintaining a safe and efficient workplace. A garage or shop “good-housekeeping checklist” shall include, but not necessarily be limited to:

- Established procedure for cleaning up
- Floor drains kept clean and covers in place
- Exits clear at all times
- Steps and stairs cleared of objects
- Aisles not blocked by stored materials
- Floors clear of unused tools and materials
- Tools and equipment returned to proper storage areas when not in use
- Adequate provision made for disposal of waste

**Note:** Lids or covers are required on containers with oily or greasy rags or other flammable waste.

- Approved dry compound or absorbent for oil and grease spills
- Floor covers for hoist controls kept in place
- Fire extinguishers, water control valves, and circuit breaker boxes provided with clear path for quick access

**Note:** Circuit breakers shall be clearly marked as to what they control.

- Clean and orderly rest rooms provided with individual hand or cloth towels, adequate supply of toilet paper with holder, soap, and at least lukewarm water
- Windows and lights kept clean
- Adequate lighting provided and all lights working properly
- Clean facilities provided for storing clothing, eating lunches, and taking breaks
- Materials securely stacked to prevent falling
- Grounds, driveways, and parking areas clean and orderly
- Adequate heating and ventilation in all parts of the building
- Sufficient room between machines for safe operation
- Spill kits used as required for in-house spills

**1001 HOUSEKEEPING (CONT.)**

- No gasoline or flammables used for cleaning equipment, floors, and other items
- Used oil containers maintained in a clean manner and all spills cleaned up immediately

**1002 LIFTING JACKS**

Hydraulic jacks shall be inspected twice yearly for leaks and other deficiencies. The jack serial number shall be entered in a logbook on each inspection. The district equipment supervisor shall be responsible for inspections and maintaining the logbook.

Capacity of jacks shall be posted legibly, and the capacity shall not be exceeded.

Jacks shall be placed on a firm base. A wood block may be necessary on soft or uneven terrain. A wood block shall be placed between jack cap and load if there is a chance of slippage.

Safety stands shall be used by employees and shall be required when working beneath raised equipment.

**1003 STATIONARY AIR COMPRESSORS**

Belt pulleys shall be guarded.

The compressor shall have an operative safety pop-off valve. The pop-off valve shall be operative when no more than 10 percent of the compressor's maximum working pressure is exceeded.

The drain plug or petcock on bottom or side of the compressor shall be removed weekly and compressor drained of water and any excess oil. A pressure gauge shall be present and operative. Air compressors shall be secured to the floor to prevent free movement.

**1004 FIXED ELECTRICAL EQUIPMENT**

Grinders, drill presses, electrical saws, etc. shall be grounded according to federal, state, and local electric codes. Water fountains and soft drink machines shall also be grounded.

**1005 BUILDING WIRING**

All permanent building wiring shall be in accordance with the current federal, state, and local electric codes.

**1006 BENCH GRINDERS**

Grinders shall have:

- Wheel guards above and below the abrasive wheel

**Note:** The abrasive wheel shall have an RPM rating higher than the RPM rating of the grinder.

- Tool rests set a maximum of 1/8 inch from the abrasive wheel
- A tongue guard mounted within 1/4 inch of the abrasive wheel
- A side cover around the spindle nut
- Mounted eye shields

**Note:** Mounted eye shields **do not** replace required eye protection.

**1007 CHAIN HOISTS**

Chain hoist capacity shall be posted legibly and shall not be exceeded. Hoist hooks shall have a safety latch or keeper.

**1008 FLOOR HOISTS**

Hoist covers shall be kept in place when not in use. The covers shall be flush with the floor surface. Floor hoists shall be inspected twice yearly for leaks and other deficiencies.

**1009 FANS**

All floor and office fans shall have blades guarded by a 1/2-inch guard or other suitable means.

**1010 BATTERY-CHARGING/CHANGING**

Battery-charging/changing areas shall be separated from the areas of other operations. A sign—**CAUTION, BATTERY-CHARGING AREA**—shall be provided. The portable battery charger shall be stored in the designated area when not in use.

Face shields, rubber gloves, and rubber aprons shall be worn by personnel engaged in battery charging operations. A **No SMOKING** sign shall be posted at the charging station.

Personnel handling battery acid (sulfuric acid) shall wear face shields, rubber gloves, and rubber aprons. These items shall be provided at the battery-charging site. During mixing, acid shall be poured into water and not vice versa. Sulfuric acid shall be stored only in equipment repair garages. Facilities shall be provided for flushing electrolytes from the eyes and skin with water when changing or charging storage batteries. A water supply capable of providing a 10-minute flush shall be within 25 feet of the work area.

**1011 SAFETY TIRE CAGES**

When tires that are installed on split rims with locking rings are filled with air, the tires shall be placed in an approved safety tire cage or rack. A clip or chuck and in-line gauge shall be used when airing tires with multipiece rims.

Field personnel who must fill such tires with air shall securely chain the rim and tire or otherwise positively secure the rim from disengaging. Tires shall be aired with lock ring facing the ground. A multipiece rim poster for compliance with [29 CFR 1910.177](#) shall be posted in the immediate vicinity of the tire cage. Tires with multipiece rims shall be changed only by trained personnel in facilities with approved tools and equipment.

**1011 SAFETY TIRE CAGES (CONT.)**

Employees engaged in servicing multipiece rims shall be trained in proper procedures by Employee Safety and Health Branch personnel.

**1012 MACHINE GUARDING**

All open or exposed belts, pulleys, sprockets, shafts, couplings, flywheels, drive chains, etc. located within 7 feet of floor or ground shall be guarded.

**1013 GREASE PITS**

Grease pits shall be provided a protective cover or removable type of 42-inch guardrail and 21-inch midrail. A positive means for stopping travel of vehicles shall be provided.

**1014 INSPECTION LIGHTS (DROP CORD LIGHTS)**

- Extension cords shall be three-wire type and must be designated for hard or extra-hard usage (such as, types S, ST, and SO).
- Cord plug ends shall not have the ground prong removed and shall be tightly closed.
- Temporary cords shall not be used as permanent wiring.
- Worn, spliced, repaired, or frayed cords shall not be used.
- Only qualified trained persons shall repair electric equipment.
- Workspaces and walkways shall be kept clear of cords.
- Droplights shall be of the approved grounded type that does not have means to attach an electrical tool.
- Extension cords and droplight cords shall not be fastened with staples, hung from nails, or suspended by wire.
- Flexible cords shall not go through wall holes.
- Only listed, labeled, or certified equipment shall be installed and used in accordance with manufacturers' instructions.

**1015 PAINT SPRAYING**

- Paint spraying indoors shall be done only in approved designated areas.
- Respirators of an approved nature shall be used when needed.
- Only approved explosion-proof inspection lights shall be used.
- All light bulbs shall have a protective globe.
- Mechanical exhaust shall be provided when tests indicate the need.
- Trash cans shall be provided with lids or covers.
- Filters on exhaust systems shall be changed as needed.
- All portable electrical and other electrical equipment shall be grounded.
- The paint spray area shall be thoroughly washed or steamed after use.
- Lead-based paint shall not be used under any circumstances.

**1016 FLAMMABLE STORAGE**

Flammables and combustibles unnecessary for operations shall not be stored inside buildings. Storage of flammables and combustibles shall be away from spark-producing operations.

Storage of flammables shall be in an approved metal cabinet when the quantity exceeds 25 gallons. Quantities of flammables one gallon or less shall be dispensed from the original container or an approved metal safety can.

Approved safety cans shall be used for handling flammables in excess of one gallon, unless the flammable is extremely hard to pour, in which case the original shipping container may be used.

**Note:** *Safety can* shall mean "an approved container of not more than a 5-gallon capacity, having a spring-closing lid and spout cover, and so designed that it will safely relieve internal pressure when subjected to fire exposure."



**1016 FLAMMABLE STORAGE (CONT.)**

Gasoline shall never be stored in vehicle trunk compartments.

**No SMOKING** signs shall be posted in areas where gasoline and other flammables are stored.

All safety cans shall be labeled in accordance with requirements in **SAFE-803**.

**1017 ELECTRICAL SAWS**

All exposed belt pulleys and other parts with in-running nip points shall be adequately guarded when located within 7 feet of the floor. All electrical saws shall be grounded. All electrical saws shall have the “on-off” power source located within easy reach of operator. No adjustments shall be made to power saws while they are operating. Exhaust systems shall be provided where tests have indicated the need.

Housekeeping around power saws is of utmost importance. Loose sawdust shall be swept as often as necessary.

- **Hand-fed Crosscut Table Saws**—Saw blades shall be guarded by a hood that will ride the stock as it is being cut. A spreader shall be provided behind the saw blade to prevent the stock from kicking back. Anti-kickback fingers shall be mounted on the hood guard and not on the spreader.
- **Swing Cutoff Saws**—Saw shall be fitted with a hood or guard that completely encloses the upper half of the saw, arbor end, and point of operation at all positions of the saw. The guard shall drop on top of and remain in contact with the material being cut. Limit chains or other equally effective means shall be provided to prevent the saw from swinging beyond the front or back edges of table. A counterweight or other device shall be provided that will automatically return the saw to the rear of the table.

**1017 ELECTRICAL SAWS (CONT.)**

- **Band Saws**—The saw blade shall be guarded as closely to the point of operation as possible. The guard shall encase wheels and all unused parts of the blade.

**1018 MECHANICAL & NATURAL VENTILATION**

Garages equipped with mechanical ventilation shall use the exhaust attached to equipment for carbon monoxide removal. Garages using natural ventilation (such as, open doors or windows) shall be inspected by Employee Safety and Health Branch personnel to ensure adequate ventilation is being provided.

**1019 WORKING BENEATH LOADS**

Employees shall use at least 4-inch x 4-inch blocking when working under raised truck beds unless the vehicle is equipped with manufacturer-installed safety supports. The blocking shall be placed horizontally behind the hydraulic cylinder. Employees shall never work beneath suspended loads that are not blocked or cribbed.

**1020 HAND TOOLS**

- Only tools that are in good condition shall be used. Defective tools shall not be issued or kept in storage with usable tools.
- Cracked and split handles shall be replaced and not taped.
- A definite storage space shall be provided on the job, in the yard, or inside buildings for proper storage of tools.
- Tools shall be put in proper storage when not in use so as not to constitute a hazard.



**1101 STORAGE & HANDLING OF OXYGEN & ACETYLENE CYLINDERS**

- Full oxygen and acetylene cylinders shall be separated by a minimum distance of 20 feet unless a fire-retardant wall separates the cylinders.
- Empty oxygen and acetylene cylinders shall have valves closed. Oxygen-cylinder valves shall never be allowed to come into contact with grease or oil.
- Oxygen and acetylene cylinders shall be secured to hand trucks with a chain when used in shop operations. Additional cylinders not secured on hand trucks shall be secured against a wall.
- Oxygen and acetylene cylinders shall be secured to prevent upsetting when used on service trucks for field repairs. Cylinders shall not be transported or operated in a horizontal position.
- Valve caps or approved cylinder safety caps shall be in place when the cylinders are transported. This also applies to cylinders secured on hand trucks and service trucks.
- Cylinders shall be stored far enough from the cutting and welding operation to prevent contact with hot slag, sparks, or flame.
- Acetylene cylinders shall have the valve wrench kept in place on the valve spindle.
- Leaking cylinders shall be moved to an open area with good ventilation. Warning signs must warn personnel against using spark- or flame-producing items.
- Cylinders containing oxygen and acetylene shall not be taken into confined spaces.
- Cylinders shall be handled with care at all times.

**1102 CUTTING OPERATIONS**

- Torches shall be lit by friction lighters or other similar sources and not by matches or cigarette lighters.
- Acetylene and oxygen cylinders shall have operable pressure regulators.
- Hoses with breaks shall be replaced. Tape on hoses with breaks shall not be allowed. Operators shall frequently inspect hoses.
- Cylinder valves shall be closed upon work completion. Pressure shall be bled from oxygen and acetylene torches.
- Acetylene cylinders frozen to the ground shall have lukewarm water applied—and not open flame.
- Hose for cutting operations shall be positioned so as not to create a tripping hazard.
- Cutting-torch operators shall immediately mark material worked upon as “hot” if other personnel may come in contact with the work.
- Acetylene torches shall not be operated with more than 15 psi.

**1103 ELECTRIC WELDING**

- Only electrode holders capable to safely handle the maximum-rated current required by the electrodes shall be used.
- Any current-carrying parts passing through the portion of the holder that the arc welder grips in his or her hand and the outer surfaces of jaws of the holder shall be fully insulated against the maximum voltage encountered to ground.

**1103 ELECTRIC WELDING (CONT.)**

- Splices and breaks in electrode cables within 10 feet of the electrode holder shall not be permitted.
- Welding cables shall be kept dry and free from grease and oil.
- The frames of all arc-welding machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire that is grounded at source of the current.
- The welding machine shall have overcurrent protection provided by a circuit breaker that is in view of the operator.
- Electrodes shall be removed from the holder when electrode cables are left unattended or when the job is completed.
- Hot electrodes shall not be dipped into water.
- In using welding power sources driven by internal combustion engines, exhaust shall be vented outside to prevent a carbon monoxide hazard.
- Mechanical ventilation hoods shall be provided to remove toxic fumes and contaminants to outside building.
- A portable welding screen is required on electric welding jobs to shield harmful rays from other employees working in the near vicinity. This requirement applies to all garages and shops, and whenever practicable, in the field.

**1104 FIRE PROTECTION**

- Service trucks shall be provided for dry-chemical fire extinguisher with at least a 20-pound Class ABC rating.
- Welding operators in shops and garages shall have a dry-chemical (Class ABC) fire extinguisher immediately available.

**1104 FIRE PROTECTION (CONT.)**

- Cutting torches and welders shall not be used on used drums, barrels, tanks, or other containers until they have been thoroughly cleaned and no traces of flammable or toxic substances remain that could explode or catch fire when heat is applied. No drum, container, or hollow structure shall be cut or welded unless a pressure vent or opening is provided.

**1105 PERSONAL PROTECTIVE EQUIPMENT**

- **Welder's gloves** shall be worn by employees while cutting, welding, or conducting other such operations.
- Welding helmets and cutting goggles shall be worn as described in [SAFE-500](#), "Personal Protective Equipment."
- Respirators shall be required and used in accordance with the Cabinet's respiratory protection program while cutting or welding under certain conditions.
- Employees shall wear filter-type respirators (except when working on a beryllium-containing base, which requires an air-line respirator) when cutting, welding, or heating in the open space on:
  - ◆ Metals containing or coated with lead-bearing materials
  - ◆ Cadmium-bearing or cadmium-coated base metals
  - ◆ Metals covered with mercury-bearing metals
  - ◆ Zinc-bearing base or filler metals
  - ◆ Lead base metals
  - ◆ Cadmium-bearing filler material
  - ◆ Metals coated with chromium-bearing materials
- Other employees exposed to the same atmosphere as the welders or cutters shall be protected in the same manner as the welders or cutters.

**1105 PERSONAL PROTECTIVE EQUIPMENT (CONT.)**

- When it is impossible to provide mechanical or local exhaust ventilation, air-line respirators shall be worn.

**Note:** When in doubt, supervisors shall contact the Employee Safety and Health Branch for information on the proper respirator to use.



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**1201 GENERAL SAFETY PRECAUTIONS**

- A written chemical hygiene plan shall be developed and implemented in accordance with OSHA standard 1910.1450 for each applicable laboratory facility.
- A written hazard communication plan shall be developed and implemented for each laboratory facility (see [SAFE-800](#)).
- Material Safety Data Sheets (MSDS) for chemicals being handled shall be available at each facility. Supervisors shall review MSDS with all affected employees.
- A person certified in first aid shall be on site in every laboratory.
- Fully stocked first-aid kits shall be readily available for all laboratory employees.
- All chemical containers shall be labeled as to their content.
- Proper ventilation shall be provided at all times.
- Personal protective equipment identified in the MSDS shall be worn as required.
- Eye wash stations and/or showers shall be located in work areas where injurious corrosive chemicals are utilized.

**1202 FIRE & EXPLOSION PROTECTION**

- Chemicals that are incompatible with one another shall be stored separately. The supervisor shall provide all employees with adequate knowledge concerning storage compatibility and safe handling practices.
- Flammables with low flash points shall be handled with extreme care. The vapor shall not be allowed to come into contact with a source of ignition. Nonsparking tools shall be used to open drums and other containers of flammable materials.
- ABC fire extinguishers shall be available and compliant with [SAFE-604](#).





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**1301 GENERAL SAFETY REQUIREMENTS**

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- Seat belts shall be used by all operators and occupants of state-owned or state-leased vehicles and equipment.
- The driver or operator of a state-owned or state-leased vehicle shall ensure that all passengers buckle their seat belts before operation of vehicle and/or equipment.
- The operator shall report through chain of command any safety hazard concerning assigned vehicle or equipment. It will then be that supervisor's responsibility to report the deficiency to the proper authority.
- Employees should not use cell phones or other electronic devices while operating state-owned or state-leased vehicles or equipment.
- Employee safety and health personnel shall periodically perform random vehicle checks.
- Vehicle operators shall perform safety inspections of assigned vehicles each morning before putting vehicles into operation. Items to check include, but are not limited to, glass, horn, mirrors, lights, turn signals, brakes, tires and wheels, exhaust system, steering mechanisms, wheel bearings, backup alarms, and warning light systems.
- Smoking is not permitted in a KYTC-owned or leased vehicle while a nonsmoker is a passenger in that vehicle. Smoking is not permitted in vehicles issued by the Division of Fleet Management.
- Equipment that does not require a license plate shall be inspected in the same manner as licensed vehicles.
- All licensed-vehicle tires shall be properly inflated and shall never have less than 1/16 inch of tire tread, except trucks, which shall have at least 1/8 inch of tread on front tires. Non-licensed equipment shall not have bald tires or tires with exposed cord.
- All equipment that normally operates, by design, under 25 mph shall have a slow-moving vehicle emblem mounted on the rear in a readily visible location, preferably to left center of equipment. Slow-moving equipment (graders, loaders, snow and ice removal equipment, and other equipment producing traffic hazards to motorists) shall have operable warning lights.

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**1301 GENERAL SAFETY REQUIREMENTS (CONT.)**

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- Equipment being towed shall have two safety chains properly connected to the towing vehicle.
- All cracked glass on vehicles and equipment shall be replaced if the operator's vision is restricted or distorted.
- Off-road equipment traveling a roadway shall utilize an escort vehicle. Escort vehicles shall comply with [SAFE-1502](#).
- Manufacturer operator and maintenance manuals shall be the standard to follow in the absence of regulatory standards.
- Most earthmoving equipment requires a sight distance of 1,000 feet to safely turn around. Flagpersons shall be positioned when this distance is not available.
- When airing loose tires mounted on rims with split lock rings, employees shall follow procedures outlined in [SAFE-1011](#).
- Emergency brakes shall be set on all equipment left unattended. Vehicles with automatic transmissions shall be left in "park." Vehicles with standard transmissions shall be left in "reverse" gear when facing downhill and "low" gear when facing uphill.
- Chocking or blocking of wheels is required when jacks are used for changing tires or the vehicle is parked on an incline.
- All vehicles and equipment shall have engines turned off while refueling. Cell phones and other electronic devices shall be turned **off** while refueling.
- For backing all equipment, a backup alarm that meets federal standards is required. Backup alarms shall be maintained in an operable condition. A backup guide is recommended when rear vision is restricted. If no backup guide is available, the operator shall walk around the vehicle before backing.
- Personnel shall not ride on the sides or top of equipment. Both the operator and the person riding shall be held accountable.
- All steps and running boards shall be kept clean and in good repair.

**1301 GENERAL SAFETY REQUIREMENTS (CONT.)**

- Cabs of vehicles shall be kept free of loose chains, bottles, etc. All required equipment, such as first-aid kits, fire extinguishers, and tools, shall be secured.
- An operable horn is required on all vehicles and equipment.

**1302 FOLLOWING DISTANCE**

- Vehicles in convoy or maintenance operations shall have at least 300 feet between vehicles.
- Use the "three-second rule" to determine safe following distance. When the vehicle in front of you passes an obstacle, count "1-one thousand, 2-one thousand, 3-one thousand." If your vehicle has not passed that obstacle, you are at a safe following distance.

**1303 TRANSPORT OPERATIONS**

- Anytime equipment is transported on "lowboys" and a wide-load situation exists, an escort vehicle shall be provided on two-lane highways. The vehicle shall have an adequate warning light system and be positioned so as to offer maximum protection to oncoming motorists in curves, over hills, etc.
- All loads over 10 1/2 feet in width or 75 feet in length (depending on road alignment) shall have an escort vehicle provided. An escort vehicle shall also be provided whenever the blade or bucket on equipment extends over the lowboy.
- The supervisor in charge of the equipment being moved shall provide traffic control measures (flagpersons, signs, etc.) when necessary.
- A trailer shall not be loaded beyond its rated capacity.
- Trailer taillights and turn signals shall be visible and in working condition.
- Cargo shall be secured by using only approved transport chain or web-strap bindings.
- Two-vehicle maximum towing load shall not be exceeded.
- Vehicle tongue weight capacity shall not be exceeded.

**1303 TRANSPORT OPERATIONS (CONT.)**

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1304 TRUCKS**

- All trucks shall be checked each morning to ensure operating systems are functioning properly (refer to [SAFE-1301](#)).
- Employees riding in trucks with seat belts shall wear belts whenever truck is in operation.
- The truck cab compartment shall contain no more passengers than the number of available seat belts.
- When driving too slowly for traffic conditions, employees shall pull safely off roadway to let traffic pass.
- Dump trucks shall be provided with mud flaps.
- All loads carrying materials subject to shifting or dislodging shall be covered with a tarp.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1305 BULLDOZERS**

- Bulldozers shall be equipped with an overhead and rear canopy guard when used in site-cleaning operations. The overhead guard shall be 1/8-inch steel plate or 1/4-inch woven wire mesh with openings 1 inch or smaller. The rear guard shall be 1/4-inch woven wire mesh with openings 1 inch or smaller.
- The bulldozer blade shall be lowered when a bulldozer is unattended.
- Extreme care shall be used when working near cuts or fills.
- When descending a slope, the operator shall doze two or three bladefuls of dirt to the edge of the slope. The operator shall ride down the slope with the edge of dirt in front of the blade. The blade shall not be lowered to regain lost dirt because this could overturn the bulldozer.

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**1305 BULLDOZERS (CONT.)**

Refer to **SAFE-1301**, “General Safety Requirements” for general safety policies.

**1306 CRANES**

- An operator shall not operate any part of a crane or load within 10 feet of a power line unless protective insulated sleeves have been placed on the line or the line has been de-energized as indicated by the owner of the power line.
- If any part of crane or load becomes energized, the operator shall remain in the cab until the line has been de-energized. If the crane catches on fire, the crane operator shall jump with both feet together as far as possible from the crane.

**Note:** An operator can be electrocuted if dismounting the crane brings the operator into contact with the crane and the ground at the same time.

- The operator shall not permit personnel to come in contact with crane carriage.
- A standard set of signal illustrations shall be posted inside the cab.
- At least a 5-pound, dry-chemical Class ABC fire extinguisher shall be available on the crane.
- The operator shall not permit personnel to ride on loads, hooks, hammers, or buckets.
- Cranes shall be equipped with boom stops.
- The operator shall not allow personnel to work beneath a raised load.
- The operator shall not leave controls while a load is suspended from the boom.
- Cranes shall have a boom-angle indicator in clear view of the operator.
- The bucket, load, block, and hooks shall be lowered to the ground or otherwise secured when the crane is shut down.

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**1306 CRANES (CONT.)**

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- The wire rope shall be inspected at least monthly. Wire rope on pile-driving operations shall be checked daily. Following is a checklist of conditions that **require** the rope to be removed from service.

- ◆ **Running Rope**

- **Condition**—six broken wires in one lay, or three broken wires in one strand

**Note:** A **strand** is that portion consisting of several wires drawn tightly together in one group. A **lay** consists of the length along the rope in which one strand makes a complete turn around the rope. Most rope used on KYTC operations is rate 6 x 19, which consists of 114 individual wires.

- **Wear**—wear of one-third the original outside diameter of individual wires
  - **Distortion**—rope distorted from kinking, etc.
  - **Diameter**—reduction of more than 3/64 inch of the original diameter of rope
  - **Broken Wires**—more than eleven broken wires in entire rope

- ◆ **Standing Rope**—more than two broken wires in one lay beyond the end connections or more than one broken wire at end connection

- The boom, hoist, and vehicle brakes shall be tested before each operation.
- Hooks that have been twisted in excess of 10 percent shall be removed from service. Cracked hooks shall be removed from service. Hooks with throat openings in excess of 15 percent of normal opening shall be replaced.
- A monthly crane inspection report shall be kept readily available by district equipment supervisors.

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**1306 CRANES (CONT.)**

Refer to **SAFE-1301**, “General Safety Requirements” for general safety policies and to **SAFE-2200**, “Working around Power Lines.”

**1307 OIL DISTRIBUTORS**

- Two dry-chemical fire extinguishers (having at least a 20-pound ABC rating) shall be mounted on the front or side. Extinguishers shall be placed approximately 20 feet to rear of distributor while oil is being heated.
- Exposed shaft couplings and pulley belts shall be shielded.
- Oil shall never be heated when oil level is below flues.
- The burners shall not be operating while distributor is being driven.
- Oil distributors shall never have burners lit within 50 feet of gasoline, diesel, or kerosene storage. Whenever possible, a segregated area shall be utilized away from vehicles and other structures.
- The hand spray bar and other lines shall be cleaned after each day's use. Waste materials shall be sprayed into container and collected as part of the hazardous waste program.
- Gasoline **shall never** be used for cleaning purposes. Do not transport open containers of gasoline on oil distributor.
- Extreme care shall be used on windy days to prevent oil from being blown onto private cars and other property. Employees shall work so that the wind will carry oil vapor away from truck exhaust or burners. This type of operation will require that careful attention be given to maintaining steps and platforms in a nonslippery condition. Personnel shall be provided a grab bar or railing when operating from rear of distributor.
- Special care shall be given to keep taillights clean and free of oil.
- LP gas shall be limited to one container per vehicle, with a capacity of not more than 100 pounds when stored within buildings. All containers' valves shall be closed.

**1307 OIL DISTRIBUTORS (CONT.)**

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1308 FORKLIFT TRUCKS**

- Only properly trained and authorized personnel shall be permitted to operate forklifts. The immediate supervisor is responsible for ensuring operators receive proper training.

**Note:** Forklift operators are certified for up to 3 years.

- Forklift trucks shall be inspected prior to use.
- An overhead guard shall be provided.
- Forklifts shall have a 5-pound ABC or all-purpose fire extinguisher.
- Forklifts shall have an audible horn.
- Loads shall be lowered to lowest position possible when moving from one location to another.
- When a forklift is left unattended, the forks shall be fully lowered, controls positioned in neutral, emergency brake engaged, and power shut off.
- Wheels shall be chocked on an incline.
- Passengers are prohibited from riding on forklift.
- Personnel shall **not** be lifted unless an approved safety platform is provided. The platform shall have toeboards, handrails, and midrails.
- The operator shall **not** permit personnel to be positioned beneath any raised portion of the forklift.
- Arms and legs shall **not** be placed between uprights of mast or outside running lines of truck.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1309 GRADERS**

- All graders shall have operable warning lights.
- All graders shall have a SLOW-MOVING VEHICLE sign mounted in the rear, preferably to left center.



**1309 GRADERS (CONT.)**

- Riders shall not be permitted at any location other than seated in grader cab.
- The blade shall be lowered to the ground when grader is left unattended.
- Graders that are used for snow and ice removal shall have a reflective guide bar attached to the blade corner nearest the traffic side.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1310 FRONT-END LOADERS, BANTAMS, GRADALLS, & EXCAVATORS**

- Operators shall wear seat belts.
- All above-mentioned equipment shall have operable warning lights and a SLOW-MOVING VEHICLE sign mounted in rear, preferably to left center.
- Operators shall lower bucket to the ground and engage parking brake upon shutting down or leaving equipment.
- Operators shall never operate equipment with personnel working directly beneath bucket.
- Operators, when traveling forward, shall carry the bucket as close to the ground as possible for best machine stability and visibility.
- It is best, whenever possible, to back the loader down steep inclines rather than travel forward with bucket loaded. Wheels shall be properly chocked on incline.
- Personnel shall not be elevated or transported in the materials bucket.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1311 BACKHOES**

- Backhoes shall be equipped with roll bars, and operators shall wear seat belts.
- All backhoes shall have warning lights.
- Backhoes shall have outriggers extended and be on solid footing before work begins.

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**1311 BACKHOES (CONT.)**

- The bucket shall be filled with dirt or rock before excavating begins.
- The boom shall not be swung over or toward employees.
- The bucket, boom, and outriggers shall be lowered when not in use.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1312 TRACTORS (Also see [SAFE-1514](#).)**

- Seat belts shall be worn by operators at all times.
- Tractor shall have a SLOW-MOVING VEHICLE sign mounted in left rear and in a location that can be readily seen. Signs shall be mounted in a position that will not block rear view of the operator.
- Riders are **never** allowed on tractor or attached equipment.
- The power takeoff shall have a protective shield in place.
- Tractors shall not be operated on slopes greater than 3:1.
- Operators shall be especially watchful for culverts and other fixtures that may be hidden by grass or weeds.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1313 ROLLERS**

- All rollers shall be provided warning lights. Lights shall be in operation during periods of maintenance operations and whenever roller is being towed.
- Extreme care shall be exercised by the roller operator on shouldering operations, especially near embankments.
- Steel-wheeled rollers shall not be used to roll shoulders less than 18 inches in width.
- Roller drums shall be chained to frame while being towed.
- Operators shall wear seat belts.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

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**1314 BUCKET TRUCKS (AERIAL LIFTS, “CHERRY PICKERS,” AUTOCRANES, & LADDER TRUCKS)**

- Bucket trucks shall not be field modified without written permission from the manufacturer.
- Bucket trucks used around energized equipment shall have an insulated platform.
- Prior to transit, the boom and bucket shall be cradled and locked down, either hydraulically or manually.
- Only trained and authorized personnel are permitted to operate a bucket truck.
- The supervisor shall maintain a record of a written monthly inspection of the bucket truck and boom equipment.
- Annual dielectric testing shall be performed to ensure insulation values.
- Only nonconductive hydraulic fluids shall be used. Adding the incorrect fluid will require purging of the entire system and a new dielectric test.
- Load limits of a bucket, boom, or jib crane shall not be exceeded.
- The boom shall not be used to lift or move materials.
- Wheel chocks shall be used prior to work beginning.
- Outriggers (stabilizers) shall be properly utilized and positioned prior to work beginning.
- Overhead clearances shall be checked prior to passage.
- The bucket shall **not** be modified in any manner.
- Booms shall be kept clean—free of dirt, oil, and road grime.
- Truck beds shall be kept orderly and clean.
- Bucket operators shall tie off to the designated anchor by utilizing a lanyard and ANSI-approved harness.
- Traffic-signal work shall also comply with [SAFE-1518](#).

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies and to [SAFE-2200](#), “Working around Power Lines.”

**1315 TRUCK-MOUNTED ATTENUATORS**

- Truck-mounted attenuators shall be mounted on well-maintained and reliable vehicles.
- Dump trucks with truck-mounted attenuators shall follow manufacturer's guidelines for ballast.

**1315 TRUCK-MOUNTED ATTENUATORS (CONT.)**

- Flashing-arrow panels shall be mounted on vehicle. A 4-foot x 8-foot arrow panel is the appropriate size for high-speed, high-volume highways.
- Truck-mounted attenuators may be utilized on moving or stationary work sites. On moving jobsites, appropriate rear-mounted warning signs shall be displayed to provide advance warning.
- All safety devices and lighting shall be kept clean and in proper working order.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.

**1316 ARROW PANEL**

- Arrow panels are key to work-zone safety and shall be maintained in accordance with the manufacturer's recommended guidelines.
- Truck-mounted or trailer-mounted arrow-panel vehicles shall be in reliable condition.
- Minimum distance for arrow legibility shall be met as follows:
  - ◆ Type A (48 inches x 24 inches) 12 lamps = 1/2 mile minimum legibility distance
  - ◆ Type B (60 inches x 30 inches) 13 lamps = 3/4 mile minimum legibility distance
  - ◆ Type C (96 inches x 48 inches) 15 lamps = 1 mile minimum legibility distance
- An arrow panel with burnt-out lamp elements or inoperative parts shall be repaired immediately.
- Only the manufacturer's listed and approved parts shall be used.

Refer to [SAFE-1301](#), “General Safety Requirements” for general safety policies.



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**1401 GENERAL INFORMATION**

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Traffic control is one of the most important functions the Transportation Cabinet can provide to its employees and the traveling public. Every reasonable precaution shall be taken to protect everyone from becoming involved in any accidents caused by construction, preconstruction, or maintenance operations.

Supervisors may delegate their authority on occasion, but never their ultimate responsibility. It is the supervisor's responsibility to assure correct jobsite procedures are followed as outlined in the [\*Manual on Uniform Traffic Control Devices\*](#) (MUTCD) and statewide flagger-training courses. KYTC Standard drawings may be utilized if they exceed the minimum requirements of the MUTCD and are more detailed than the minimum drawings of the MUTCD. In addition, a temporary traffic control plan shall be developed in accordance with the MUTCD for all job sites according to the nature, location, and duration of work; type of roadway and speed of traffic; and potential hazards.

In hazardous situations, state or local law enforcement assistance may be requested.

On jobs requiring channelizing devices, the following sequence for set up shall be followed:

1. Signs
2. Flaggers/Arrow Panels
3. Cones/Other Channelizing Devices
4. Crew and Equipment

Upon conclusion of the work, they shall be removed in reverse order. All warning signs and arrow panels shall be kept in place during pickup.

**A fully stocked first-aid kit and a person adequately trained to render first aid shall be present on all jobsites for the duration of the job.**

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**1402 SIGNS, CONES, & OTHER TRAFFIC CONTROL DEVICES**

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All signs, cones, drums, and other traffic control devices shall conform to the MUTCD and other applicable standard requirements for size, shape, color, planned use, and retro-reflectiveness.

All warning signs shall be black lettering on an orange background. When warning signs are utilized on interstates and parkways, they shall be 48 inches in size. When possible, this size shall be used on four-lane roads and urban areas; otherwise, 36-inch signs shall be used unless lack of adequate shouldering would cause the sign to be located partially in the roadway.

The lead sign on each end of all jobsites shall have a traffic cone placed next to the sign (or red flag attached to it). All warning signs shall have the bottom portion a minimum of 12 inches from the ground.

Traffic cones (measuring a minimum of 28 inches) or drums shall be used on four-lane stationary jobsites. Cones and drums shall be kept clean and bright for maximum target value. The first cone or drum shall be placed 840 feet from the actual jobsite and on the shoulder. The cones or drums shall taper from the shoulder gradually to the roadway center-line mark, up to and including the last piece of equipment or the last employee.

To determine taper lengths (L):

- For posted speeds (S) of **40 mph or less**, use:  $L = \frac{WS^2}{60}$
- For posted speeds of **45 mph or more**, use:  $L = WS$

**Note:** In the above equations, W = lane width.

For example, a road with a speed limit of 35 mph and a lane width of 12 feet would require a taper length of 245 feet, and a road with a speed limit of 65 mph with a lane width of 12 feet would require a taper length of 780 feet.

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**1402 SIGNS, CONES, & OTHER TRAFFIC CONTROL DEVICES (CONT.)**

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There shall be a traffic cone positioned every 40 feet on the taper and center line of the tangent when posted speed limits are 55 mph or less. On multi-lane operations where the posted speed limit is greater than 55 mph, cones or other channelizing devices in the tangent may be placed at 80-foot intervals or less (**not tapers**) on the center line for these higher-speed lane closures.

**1403 HAND-SIGNALING DEVICES**

A number of hand-signaling devices such as STOP/SLOW paddles, lights, and red flags are used in controlling traffic through work zones. The sign paddle bearing the clear message STOP/SLOW provides motorists with more positive guidance than flags and shall be the primary hand-signaling device. Flag use shall be limited to emergency situations and middle flagger operations

**1404 FLAGGERS**

Flaggers are responsible for human safety and the prevention of equipment and property damage; therefore, it is important that responsible personnel be selected. A flagger shall possess the following qualifications: adequate physical condition, courteous but firm manner, neat appearance, and sense of responsibility for the safety of the public and working crew.

Flaggers are provided at jobsites to stop traffic intermittently as necessitated by work progress and to maintain continuous traffic flow past the jobsite at reduced speeds to protect the work crew. For both of these functions, the flagger shall be clearly visible at all times to approaching traffic for a distance of at least 500 feet to permit proper response by motorists to the flagging instructions.

Flaggers shall be positioned on the shoulder away from all work vehicles and equipment. In addition, an escape route shall be planned, and color contrast between the flagger's protective garment and background shall be maintained.

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**1404 FLAGGERS (CONT.)**

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Flaggers utilized on any operation shall have current KYTC certification (initial training when hired and then refresher training every two years thereafter).

Required flagger equipment consists of ANSI 107-2004 Class II-approved high-visibility apparel and cap/hard hat, STOP/Slow paddle, and certification card.

For nighttime operations, a flashlight with red cone shall be used and high-visibility apparel shall be minimum Class III.

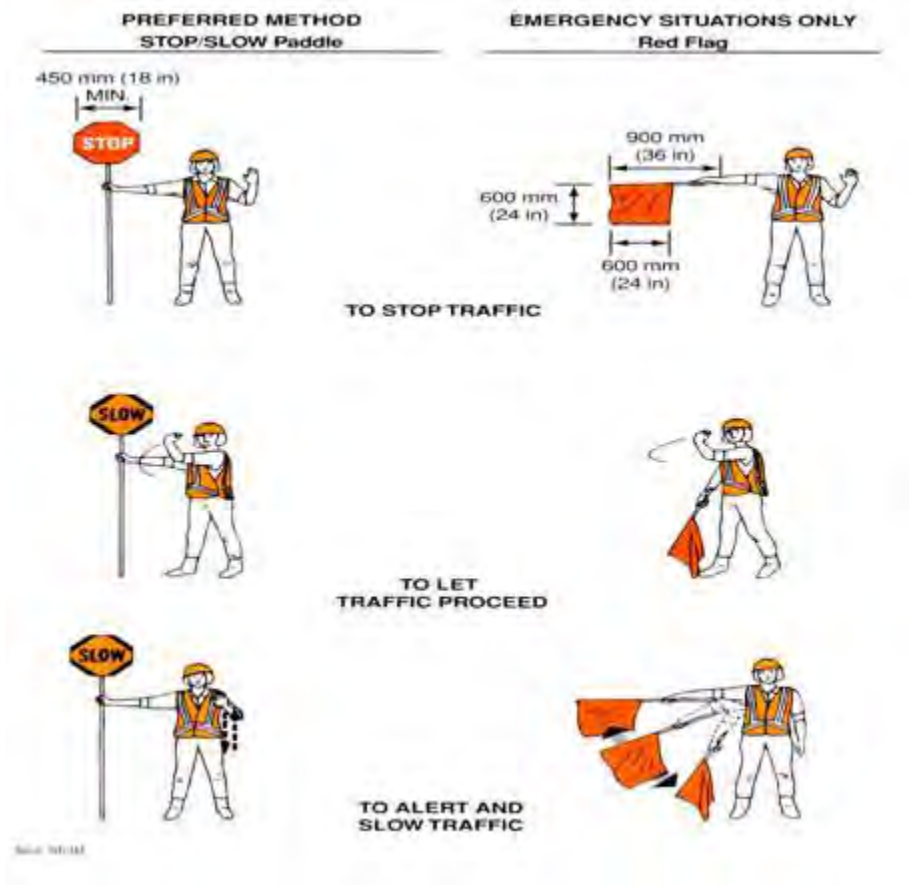
Flaggers shall not use personal cell phones, stereo headphones, video games, or other distracting devices while flagging. Only KYTC-issued communication equipment shall be allowed.

Before KYTC employees are allowed to engage in flagging procedures, they must successfully pass KYTC course TCS-26201, "Traffic Control/Flagger Certification" (provided by KYTC employee safety personnel) and receive a valid KYTC Flagger Certification card.

It is strongly recommended that new hire employees have a minimum of six months of maintenance/highway work experience before supervisors assign flagging duties.

- **Proper Flagging Procedures**—The following figure details proper flagging procedures to be utilized with both paddle and flag.





- **Middle Flagger**—A middle flagger shall be used when two end flaggers cannot maintain line of sight or radio communications. In addition, middle flaggers might be considered when traffic may enter workzones between flagger stations. The middle flagger, when used, will be in charge and in control of traffic flow through the jobsite. When more than one middle flagger is used, one shall be designated as the leader. A middle flagger shall be used anytime carriage-type heavy equipment swings into an open travel lane or the path of motorists or pedestrians. Typically cranes, drotts, bantams, etc., have a tail swing that can intrude into paths used by the public or workers.

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**1404 FLAGGERS (CONT.)**

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The tail swing radius shall be protected by barricades, cones, or a middle flagger. The carriage equipment operator shall not use two-way radios to eliminate use of a middle flagger. A middle flagger provides instant communication, coordinates traffic flow, recognizes an impending hazard, and responds to prevent the hazard.

- **Middle Flagger Signals**—To stop traffic on the left, the middle flagger shall hold the paddle or flag in the left hand and raise and point it in the direction of the end flagger on the left. The middle flagger shall maintain the paddle or flag in the left hand and use the right hand to motion traffic on the right through the jobsite.

To stop traffic on the right, the middle flagger shall follow the same procedure described above except the end flagger on the right will be signaled. The paddle or flag shall be in the right hand, and the left hand will be used to motion traffic on the left through the jobsite.

- **Hi-Visibility Safety Apparel**—Retroreflective vests or other approved high-visibility ("hi-vis") safety apparel (meeting the requirements of ISEA's "American National Standard for High-Visibility Safety Apparel," or equivalent revisions, and labeled ANSI 107-1999, or equivalent revisions; standard performance for Class 2, or 3 risk exposure) shall be worn by all employees working in traffic-control flagging operations, within the right-of-way limits, on construction projects, or in any other area where they are potentially exposed to the risk of moving roadway traffic or equipment.

**Note:** Supervisors are designated as the competent persons to be responsible for worker safety within the activity area of any job site and thus responsible for the assessment, selection, and use of appropriate PPE.

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**1404 FLAGGERS (CONT.)**

- **Sign Paddles**—Sign paddles shall be at least 18 inches wide with letters at least 6 inches high. A rigid handle shall be provided. This combination sign may be fabricated from sheet metal or other semi-rigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When read at night, the STOP face shall be reflectorized red with white reflectorized letters and border, and the SLOW face shall be reflectorized orange with black letters and border.
- **Flags**—Flags used for signaling purposes in emergency situations, in middle flagging operations, or at spot locations shall be a minimum of 24 inches x 24 inches, made of a good grade of red material, and securely fastened to a staff approximately 3 feet in length. The free edge should be weighted to ensure that the flags will hang vertically, even in high winds. When utilized in nighttime operations, flags shall be retroreflectorized.

**1405 TRAFFIC-CONTROL METHODS**

- **Two-Way Radios**—Using KYTC-approved two-way radios is the preferred method of communication between flaggers. The system shall be powerful enough for flaggers to clearly communicate without interference or fadeout and should be tested prior to use. FCC standards shall be complied with at all times.
- **Pilot Truck**—The pilot truck method provides for smooth traffic flow when the end flaggers cannot observe each other. This method may be used in light or moderate traffic flow situations. A pickup truck or a vehicle equipped with appropriate warning lights and a tailgate-mounted sign reading PILOT TRUCK—FOLLOW ME is required. The pilot truck will guide the traffic the first flagger has stopped to the second flagger at the other end. Once a flagger's traffic has left with the pilot truck, all other oncoming vehicles shall be stopped.

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**1405 TRAFFIC-CONTROL METHODS (CONT.)**

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After delivering traffic to the other flagger, the pilot truck shall then guide this flagger's traffic back to the other flagger.

**Note:** Equipment utilized on this type of jobsite shall, as much as possible, remain out of the open traffic lane.

- **Pass-the-Flag**—This method provides for adequate traffic control in moderate and heavy traffic flow situations. A red cloth or other designated object is passed from the flagger whose traffic has been stopped to the last motorist in line, who is instructed by the flagger to give the red cloth or object to the flagger at the other end of the jobsite. After the last motorist has left the flagging station, all other oncoming traffic shall be stopped. The flagger at the other end of the jobsite, upon receiving the red cloth or other object, shall then proceed in the same manner described previously. If a flagger has not received the cloth or object within a reasonable amount of time, the flagger shall make an effort to determine the problem.



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**1501 GENERAL INFORMATION**

It is impossible to describe in this manual the traffic control methods for all jobs performed by the Cabinet. All traffic control methods shall comply with the [\*Manual on Uniform Traffic Control Devices \(MUTCD\)\*](#).

**1502 ESCORT VEHICLES (SHADOW VEHICLES)**

Front or rear escort vehicles are used to maximize safety for work crews and the traveling public. Generally, moving jobs are fast-moving; therefore, flaggers and stationary signing are impractical. A typical moving work site may include, but not be limited to, traffic-lane striping, roadside spraying, vac-all sweeping, shoulder operations with a grader, following wide loads, or some mowing operations. Escorts provide advance warning to the traveling public and protection to the work vehicles. Where hills or curves eliminate the motorist's sight distance to the work vehicle, an escort vehicle shall be used.

The escort shall follow the moving work site at a safe distance, usually 500 feet. However, the distance will vary according to type of road, speed of traffic, volume of traffic, speed of work vehicles, etc.

Escort drivers shall constantly remain aware of their vehicles' positioning and of the motorists' vehicles and shall vary their speeds and hold back on curves and hillcrests to give more warning to motorists. Escort drivers may have to speed up to regain the proper distance from work vehicles.

All escort vehicles shall have appropriate rear-mounted warning signs to properly advise motorists of hazards ahead and be equipped with appropriate safety devices including, but not limited to, truck-mounted attenuators, arrow boards, and lighting packages (in accordance with policy).

Arrow panels used on multilane highways shall, as a minimum, be Type B, with the size of 5 feet x 2 1/2 feet. The Cabinet, however, recommends that arrow panels Type C (4 feet x 8 feet) be used whenever possible. Arrow panels shall be in caution mode when operating from the shoulder or emergency strip.

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**1502 ESCORT VEHICLES (SHADOW VEHICLES) (CONT.)**

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Arrow panels, their use, size, legibility distance, and other specifications shall conform to **Section 6F.56** and **Figure 6F-6** of the [MUTCD](#).

Arrow panels **shall not** be utilized on two-lane roads.

Truck-mounted attenuators utilized on escort vehicles shall comply with [SAFE-1315](#).

The escort and work vehicles shall have two-way radio contact.

Escort vehicles shall not be used to transport flammable materials or liquids.

**1503 POTHOLE PATCHING**

The supervisor shall, as a part of the temporary traffic control plan, consider work location, degree of work involved, sight distance, traffic volume, traffic speed, and road character, and shall determine what traffic control operation will be necessary in each county/district.

➤ **Stationary**

- ◆ Work operations performed in dangerous locations (bridges, cuts, high-accident areas, high-speed/high-volume highways) or where heavy workload activities are expected shall utilize a full lane closure (stationary signage, coned closed lane, and flaggers) for maximum protection.
- ◆ Typically work on Kentucky highways does not involve low-volume/low-speed traffic, and adequate sight distance is difficult to maintain. Most such work operations are considered stationary work zones.

➤ **Mobile—Work that moves intermittently or continuously**

- ◆ Brief, frequently moving work operations performed where flaggers can move along with the work shall utilize stationary warning signs. Work-zone limits are recommended to be a 1-mile safe distance and shall not exceed 2 miles.

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**1503 POTHOLE PATCHING (CONT.)**

- ◆ Moving work operations of a fast-moving nature where stationary signage is not feasible shall utilize vehicle-mounted signage on each vehicle. All moving operations shall utilize escort vehicles to provide adequate sight distance and notification to motorists of the work activity. See [SAFE-1502](#).
- ◆ A traffic observer or lookout shall be positioned to continually watch traffic and warn workers whenever trouble is anticipated.

Forewarning and sight distance shall be properly maintained on either stationary or moving pothole-patching work operations.

Both operations may require additional signage, channelizing devices, attenuators, escorts, arrow panels, high-intensity lights, and/or police participation to maintain a safe work zone.

Each worker shall have a planned escape route.

**1504 LITTER PICKUP**

As it is not practical to utilize flaggers in this operation, it is mandatory that vehicles utilized on this operation remain off the roadway whenever possible. If there is not enough shoulder to allow for this, the driver shall park at the nearest off-the-roadway location. The employees picking up trash shall work toward the truck. These employees shall wear hi-visibility apparel. The vehicle utilized in this operation shall have, at minimum, the low-risk warning-light package and appropriate rear-mounted signage.

**1505 GUARDRAIL REPAIR**

During guardrail repair where any lane of travel is impeded, it will be necessary to have a standard lane closure with flaggers utilized for traffic control. All standard warning devices or traffic control devices shall be a part of the temporary traffic control plan.

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**1506 CUTTING BRUSH**

Vehicles used in cutting brush shall be parked off the roadway whenever possible. If the vehicle cannot be parked completely off the traveled portion of the roadway, normal traffic control procedures (including warning signs, flaggers, and channelizing devices) shall be utilized. If the truck can be parked off the traveled portion of the roadway, an appropriate sign may be displayed (red cone near it).

Particular care should be taken by employees when cutting brush that they are not working near other employees so as to create a hazard.

Employees shall wear required PPE during brush-cutting operations. The supervisor shall assess PPE needs and ensure the use of required PPE.

When loading brush on vehicles, a red flag shall be affixed to the rearmost portion of the brush that extends beyond the tailgate section. The load of brush shall be secured in such a manner so as not to be a hazard to the traveling public.

The feeding operator and all personnel working within 20 feet of brush-chipping equipment shall wear approved head, eye, hand, foot, and hearing protection.

Loose clothing shall not be worn around running machinery or equipment where entanglement can occur.

**1507 SHOULDERING OPERATIONS WITH MOTOR GRADERS**

If operations are slow-moving, normal warning signs and flagging procedures shall be utilized.

If the shouldering operations are fast-moving, the use of normal flagging procedures is not practical. In this case, an appropriate warning sign shall be utilized on each end of the work area (with a red flag affixed or red cone placed near it).



**1507 SHOULDERING OPERATIONS WITH MOTOR GRADERS (CONT.)**

When flaggers cannot be utilized, this operation shall have a rear escort vehicle with (as a minimum) a low-risk warning-light package and a tailgate-mounted sign. This vehicle shall remain approximately 500 feet behind the shouldering operation. When the grader is operated over a hill or in a curve, the driver of the escort vehicle shall use sound judgment in remaining in a location visible to traffic to provide warning. The escort vehicle shall be in compliance with [SAFE-1502](#).

**1508 DITCHING OPERATIONS**

Normal flagging and warning-sign procedures shall be utilized. A ground guide should be utilized to safely direct dump trucks to and from the vicinity of the operation.

**1509 BACKFILLING**

During the dumping of material along the side of the road, the operation shall be properly signed, and flaggers shall be utilized.

**1510 PAVING OPERATIONS**

Paving operations are slow-moving and shall utilize normal warning signs and flagger traffic-control procedures.

An ABC fire extinguisher shall be available on motorized paving machines.

Employees shall exercise extreme caution when working on or near the center line.

**1511 BRIDGE CONSTRUCTION, INSPECTION, & MAINTENANCE**

When working on structures where an employee could fall into a waterway, employees shall wear Coast Guard-approved life jackets. Life jackets are not necessary if a fall-arrest system that incorporates 100 percent tie-off is used. When a fall of 4 feet or more is possible, an ANSI-approved harness and lanyard shall be used.

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**1511 BRIDGE CONSTRUCTION, INSPECTION, & MAINTENANCE (CONT.)**

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At least one readily available lifesaving skiff with a buoy and 90 feet of line shall be immediately available at locations where employees are working over or adjacent to water where a drowning hazard may exist.

Employees shall observe general safety rules for personal protective equipment, as stated in [SAFE-500](#).

Employees engaged in sandblasting operations shall be required to be medically evaluated in accordance with the KYTC respiratory protection program.

**1512 ROADSIDE SPRAYING, FERTILIZING, ETC.**

The nature of this job, being slow-moving, creates a hazard to both the crew and public and requires several safeguards to be taken.

- All persons who handle, load, mix, or apply pesticides shall be licensed and certified by the Kentucky Department of Agriculture.
- The applicator shall comply with the PPE requirements shown on the pesticide label and the MSDS. The minimum PPE required for all pesticide applications is long pants, long-sleeved shirt, shoes, and socks.
- When spraying or fertilizing on a **two-lane highway**, the sprayer unit shall have at minimum low-risk lighting package and a tailgate-mounted sign approximating **CAUTION—SPRAYING OPERATIONS**. A rear escort vehicle should also be considered and utilized.
- When working from a travel lane on a **multilane highway**, the hydroseeder or spray truck shall be equipped with appropriate warning signs and lighting package. An escort vehicle shall be utilized and equipped with a truck-mounted attenuator with arrow panel and comply with [SAFE-1315](#).
- The operator shall frequently check the arrow panel to ensure the bulbs are operative.

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**1512 ROADSIDE SPRAYING, FERTILIZING, ETC. (CONT.)**

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- Sprayer and hydroseeder units, other than those mounted on pickup trucks, shall be provided an adequate means of communication between the driver and the operator in rear.
- Face shields or goggles approved for these types of operations and chemical-resistant gloves, aprons, or coveralls shall be used by employees while mixing pesticides.
- Spraying operations shall not be conducted on extremely windy days. The supervisor shall determine if weather conditions will permit the spraying operation to be conducted safely.
- If spray solution comes in contact with eyes, the employee shall wash immediately with clean water or eyewash solution.
- Crews shall frequently inspect nozzles and hoses for leakage and deterioration.
- Spraying operations shall be conducted within guidelines prescribed by the Division of Maintenance.
- Standard guardrail systems shall be provided on units if employees are exposed to falling hazards.

**1513 SNOW- & ICE-REMOVAL OPERATIONS**

Vehicles equipped with salt spreaders shall have appropriate warning lights.

All operators shall have a valid CDL and shall undergo annual "Snow & Ice Training."

Front-mounted snowplows shall have a reflective guide bar attached to each corner of plow. Headlights and warning lights shall be used for both daytime and nighttime operations.

**1514 TRACTOR MOWING**

Mowers shall be equipped with two red flags on 6-foot staffs, a triangular **SLOW-MOVING VEHICLE** sign, and appropriate warning lights.

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**1514 TRACTOR MOWING (CONT.)**

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Mower operations shall be conducted between appropriate signage. The **END MOWING ZONE** sign shall not be placed more than 2 miles from the **BEGIN MOWING ZONE** or **MOWING ZONE** sign. Additional **MOWING ZONE** signs may be placed every 2 miles to extend the mowing zone up to a maximum of 4 miles.

The mower arm shall not be permitted to reach over the roadway at any time while mowing the center island or median.

All tractors used on highway-mowing operations shall have a rearview mirror mounted on the left side.

All mowers shall have compliant machine guarding.

Mower operators shall take extra precautions when operating near crests of hills, excavations, or other areas where the machine may tip or drop off.

Operators shall make proper observations before backing or turning around their equipment.

Before attempting to make repairs to the cutting blade or knife sections or before cleaning the blade, the operator shall shut off the mower engine, place in the neutral position the lever activating the knife blades, and block the wheels of the machine to keep it from rolling, if necessary.

If the mower is equipped with a bushhog, it shall be equipped with protective chains or guard to prevent throwing objects. A steel mesh screen shall be mounted on the tractor between the operator and the bushhog. Other mowers operating behind a bushhog shall stay at least 300 feet behind.

Sickle blades shall be adjusted to allow the blade to swing back when striking a stationary object.

Mowing operations shall not be performed on slopes greater than 3/1 (33 degree slope). Slope mowing operations shall utilize appropriate slope mowing equipment with compliant guarding and have appropriate traffic control.

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**1515 HAND LAWN MOWERS**

Before refueling, the operator shall ensure the motor has sufficiently cooled. When changing or sharpening the blade or doing any repair work under the mower, the operator shall shut off the engine and disconnect the spark plug wire.

Grass discharge shall not be blown toward other personnel.

**1516 CENTER-LINE STRIPING**

The center-line striping operation on two-lane highways shall be protected with a rear escort vehicle. A front escort vehicle is optional. The rear escort vehicle shall have at minimum low-risk lighting package and a tailgate-mounted warning sign with the message approximating **SLOW VEHICLE AHEAD**. The rear escort vehicle shall remain approximately 500 feet behind the striping operation at all times.

If used, the front escort vehicle shall have minimum-level lighting and a sign approximating **PASS WITH CAUTION**. The driver of the front escort vehicle shall always be positioned to offer maximum warning for oncoming motorists.

Truck-mounted attenuators shall be utilized in accordance with [SAFE-1315](#).

All escort vehicles shall comply with [SAFE-1502](#).

The paint-mixing truck shall park at a predetermined location and not be part of the moving striping operation.

On highways of four lanes or greater, a truck-mounted attenuator with a rear-mounted flashing arrow shall be utilized as a rear escort vehicle.

Two 20-ABC fire extinguishers shall be provided on vehicles used for mixing paint or paint striping.

**1517 THERMOPLASTIC-STRIPING OPERATIONS**

If the equipment must be in the traveled portion of the roadway, a temporary traffic control plan shall be employed that includes the required warning lights, signage, and number of flaggers. Since this is a stationary job, the work area shall be protected by a series of channelizing devices.

Employees engaged in mixture operations involving glass beads shall wear ANSI-approved eye protection.

All waste products from this operation, such as leftover paint or flushed line residue, shall be collected and disposed of in accordance with the [Division of Environmental Analysis](#) hazardous waste program.

**1518 TRAFFIC-SIGNAL WORK**

**Employees shall not work from the bucket over an unprotected open lane.**

If the equipment must be in the traveled portion of the roadway, adequate warning lights (appropriately illuminated at night), signage, and number of flaggers shall be utilized. Also, the work vehicle shall be protected by a series of channelizing devices on all stationary jobs.

Overhead work from the bucket shall be performed within the coned work area only. No portion of an aerial lift platform or supporting structure shall extend over an open lane of traffic, regardless of the working height.

Platforms on aerial lifts (autocranes, levelator trucks, etc.) shall not be operated in excess of the posted capacity of the platform. Adequate guardrail and fall protection shall be provided if employees are working at heights above 4 feet, in accordance with the [KYTC Fall Protection Program](#).

The operator shall utilize full fall protection (tie off a lanyard to the equipment anchor point and ANSI-approved harness dorsal D-ring).

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**1518 TRAFFIC-SIGNAL WORK (CONT.)**

Two or more individuals should be on the scene during bucket-truck operations. The use of law enforcement is suggested where signals are mounted diagonally across an intersection. If law enforcement is unavailable and conditions warrant, place the traffic signal on all-red flash and/or place stop signs on all approaches.

A truck-mounted attenuator and arrow panel may be used in affected lanes on roads with five or more lanes and posted speeds of 45 mph or greater.

Bucket-truck work shall also comply with [SAFE-1314](#).

**1519 SIGN INSTALLATION CREW**

If the equipment must be in the traveled portion of the roadway, adequate warning lights, signage, and number of flaggers shall be utilized. Also, the work vehicle shall be protected by a series of channelizing devices on all stationary jobs.

Personnel driving sign posts shall utilize appropriate eye, foot, hand, head, and hearing protection.

**1520 SURVEY CREWS**

When Cabinet personnel are surveying within right-of-way limits, a sign **SURVEY CREW** shall be utilized at each end of the jobsite. The lead sign shall have a red cone placed next to it. **ONE-LANE ROAD AHEAD** and **FLAGGERS AHEAD** signs shall be used if there is a lane closure and flaggers are utilized.



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**1601 INTRODUCTION**

This chapter describes the signals for and treatment of basic injuries and illnesses that could occur in the workplace and is provided as refresher information to trained personnel and awareness information to other employees. Every work location shall have persons adequately trained to render first aid, as well as, trained in the Cabinet's Blood-Borne Pathogens Exposure Control Plan. Facilities shall conspicuously post the names of those persons trained and maintain documentation of their training records.

Only those persons trained to render first aid shall be required to do so. Employees who are not trained that choose to provide first-aid treatment should refer to the "Good Samaritan Act." In accordance with the Cabinet's safety and health program all persons potentially exposed to blood or other potentially infectious material shall utilize "Universal Precautions" ([29 CFR 1910.1030](#)) and treat all blood and body fluid as being infected and protect themselves from exposure at all times. Only trained employees shall conduct cleanup operations. Written instructions for proper cleanup techniques are contained within blood-borne pathogen cleanup kits.

Fully stocked first-aid kits and blood-borne pathogen kits shall be available at all work sites. First-aid kits are required in all Cabinet facilities and in all trucks. Refill supplies and replacement first-aid and blood-borne pathogen kits may be requisitioned at equipment garages. Supervisors are responsible for checking kits and keeping them stocked.

**Note: A fully stocked first-aid kit and a person adequately trained to render first aid shall be present at every jobsite for the duration of the job.**

Additional information regarding the Blood-Borne Pathogens Exposure Control Plan may be obtained from the Employee Safety and Health Branch and [SAFE-1701](#).

Life-threatening conditions must be treated first. Any person severely injured may develop shock. Treatment must start immediately, without waiting for symptoms to develop.



**1602 GENERAL INSTRUCTIONS**

- Check the victim and the scene
- Call **911**
- Obtain consent

**Note:** If the victim is unconscious, consent is implied.

- Check the victim (for bleeding, skin color, medical ID bracelets, observable signals of pain)
- Begin appropriate treatment
- Do not move the victim unless the scene becomes unsafe

**1603 BLEEDING (EXTERNAL)**

- Control bleeding by placing a sterile dressing over wound and applying pressure
- If possible, elevate wound above level of heart
- Cover dressing with bandage
- If bleeding continues, apply additional dressings/bandages and continue applying direct pressure
- Seek medical assistance by calling **911**
- Take steps to minimize shock

**1604 CHOKING (CONSCIOUS VICTIM ONLY)**

- From behind, place thumb side of fist against middle of abdomen above navel. Grasp fist with other hand.
- Give five abdominal thrusts.
- Give five back blows and five abdominal thrusts.
- Repeat until object is dislodged or person becomes unconscious.
- Begin rescue breathing techniques if the person becomes unconscious.

**1605 FRACTURES, DISLOCATIONS, & SPRAINS**

- Support injured area above and below injury site
- Check for feeling, warmth, and color
- Immobilize body part above and below injured area by splinting
- Recheck for feeling, warmth, and color

**1605 FRACTURES, DISLOCATIONS, & SPRAINS (CONT.)**

- Apply cold compresses to reduce swelling and pain
- For general care for muscle, bone, or joint injuries remember **R.I.C.E.:**
  - ◆ **REST**
  - ◆ **IMMOBILIZE**
  - ◆ **COLD**
  - ◆ **ELEVATION**

**1606 SHOCK (TRAUMATIC)**

Shock is a life-threatening condition where not enough blood is being delivered to all parts of the body.

- **Signals**
  - ◆ Restlessness or irritability
  - ◆ Nausea and vomiting
  - ◆ Altered level of consciousness
  - ◆ Pale or ashen, cool, moist skin
  - ◆ Blue tinge to lips and nail beds
  - ◆ Rapid breathing and rapid pulse
  - ◆ Excessive thirst
- **Treatment**
  - ◆ Call **911**
  - ◆ Control any external bleeding
  - ◆ Keep the victim from getting chilled or overheated
  - ◆ Elevate the legs 8-12 inches if you do not suspect a head, neck, or back injury or broken bones in the hips or legs
  - ◆ Comfort and reassure the victim until advanced medical personnel arrive and take over
  - ◆ **Do not give food or drink to the victim**

**1607 FROSTBITE**

Frostbite occurs when body tissue freezes following exposure to a cold environment and typically affects extremities (fingers, hands, nose, feet, and toes).

➤ **Signals**

- ◆ Loss of feeling and sensation in the affected area
- ◆ Skin appears waxy, cold to the touch, or discolored (flushed, white, yellow, or blue)

➤ **Treatment**

- ◆ Get the victim out of the cold
- ◆ Handle the area gently
- ◆ Warm gently by soaking the affected area in warm water (100-105 degrees F) until normal color returns and the area feels warm
- ◆ Loosely bandage the area with dry, sterile dressings
- ◆ If the person's fingers or toes are frostbitten, place dry, sterile gauze between them to keep them separated
- ◆ Take precautions to prevent hypothermia
- ◆ Call 911 to seek emergency medical care as soon as possible

**DO NOT:**

- ◆ Attempt to rewarm the frostbitten area if there is a chance that it might refreeze or if you are close to a medical facility
- ◆ Rub the area
- ◆ Apply direct heat from stove or heat lamp
- ◆ Break the blisters
- ◆ Apply ointments

**1608 HYPOTHERMIA**

Hypothermia is a life-threatening condition that occurs when the entire body cools because its ability to keep warm fails. The person will die if not given care.

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**1608 HYPOTHERMIA (CONT.)**

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**➤ Signals**

- ◆ Shivering
- ◆ Slow, irregular pulse
- ◆ Numbness
- ◆ Glassy stare
- ◆ Weakness
- ◆ Apathy or impaired judgment
- ◆ Loss of muscle control, no shivering, or loss of consciousness (late stages of hypothermia)

**➤ Treatment**

- ◆ Call **911**
- ◆ Gently move the victim to a warm place
- ◆ Monitor airway, breathing, and circulation
- ◆ Warm the victim by wrapping him or her in blankets or by putting dry clothing on the person
- ◆ If the victim is alert, give him or her warm liquids to drink that do not contain alcohol or caffeine
- ◆ Monitor for signs of shock

**1609 HEAT EMERGENCIES**

- **Heat Cramps** are painful muscle spasms, usually in the legs and the abdomen.
- **Heat Exhaustion (early state)** is an early indicator that the body's cooling system is becoming overwhelmed.

**Signals:**

- ◆ Cool, moist, pale, flushed, or ashen skin
- ◆ Headache, nausea, dizziness
- ◆ Weakness, exhaustion
- ◆ Heavy sweating

**1609 HEAT EMERGENCIES (CONT.)**

- **Heat Stroke** (late stage) is when the body's systems are overwhelmed by heat and stop functioning. **Heat stroke is a life-threatening condition.**

**Signals:**

- ◆ Change in the level of consciousness
  - ◆ High body temperature
  - ◆ Red, hot skin that can be either dry or moist
  - ◆ Rapid or weak pulse
  - ◆ Rapid or shallow breathing
  - ◆ Vomiting
- **Treatment for Heat-Related Emergencies**
- ◆ Move the person to a cool place
  - ◆ Loosen tight clothing
  - ◆ Remove perspiration-soaked clothing
  - ◆ Apply cool, wet towels to the skin
  - ◆ Fan the person
  - ◆ If the person is conscious, give small amounts of cool water to drink
  - ◆ **If the person refuses water, vomits, or starts to lose consciousness:**
    - Send someone to call 911 or the local emergency number
    - Place the person on his or her side
    - Continue to cool the person by using ice or cold packs on their wrists, ankles, groin, and neck and in the armpits
    - Continue to check signs of life (movement and breathing)

**1610 POISONING**

If you suspect a person is showing signs of poisoning, treat as a life threatening condition, call 911, and call Poison Control at **1-800-722-5725**.

**1611 POISON IVY**

Some of the most common and severe allergic reactions result from contact with plants of the poison ivy group. Ordinarily, the rash begins within a few hours after exposure but may be delayed for 24 to 48 hours.

**➤ Signals**

- ◆ Itching
- ◆ Redness
- ◆ Rash
- ◆ Possible Headache and Fever

**➤ Treatment**

- ◆ Remove contaminated clothing
- ◆ Wash all exposed areas thoroughly with soap and water
- ◆ Apply calamine or other soothing skin lotion if rash is mild
- ◆ Get medical advice if a severe reaction occurs or if there is a known history of previous sensitivity

**1612 BURNS**

A burn is an injury that results from heat, electricity, chemicals, or radiation. A burn may vary in depth, size, and severity.

**➤ Classification**

- ◆ First degree—superficial burn; skin is red, dry, and usually painful; the area may swell
- ◆ Second degree—partial thickness; skin is red and has blisters that may open and weep clear fluid, making the skin appear wet; may appear mottled and often swells
- ◆ Third degree—full thickness; skin may be brown or black (charred) with the tissue underneath appearing white

**1612 BURNS (CONT.)****➤ Treatment**

1. Stop the burning
2. Cool the burned areas
3. Cover the burned areas with dry, sterile, loose dressings or clean cloth
4. If severe, call **911**

**DO NOT:**

- ◆ Apply ice or ice water except on a small, superficial burn and then for no more than 10 minutes, as ice can cause the body to lose heat and further damage delicate tissue
- ◆ Touch a burn with anything except a clean covering
- ◆ Remove any piece of clothing that is sticking to the burned area
- ◆ Try to clean a severe burn
- ◆ Break blisters
- ◆ Use any kind of ointment on a severe burn

**1613 SNAKE BITES**

The bite of a poisonous snake is extremely painful and is characterized by rapid swelling of the affected part.

- Call 911 or the local emergency number
- Wash the wound
- Keep the injured area still and lower than the heart

**1614 INSECT STINGS**

- Remove stinger by scraping, not pulling or squeezing
- Find out from the victim as quickly as possible if they are allergic and have an epinephrine auto-injector
- Wash the site with soap and water
- Cover the site and keep it clean
- Apply a cold pack to the area to reduce pain and swelling
- Watch the person for signals of an allergic reaction

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**1614 INSECT STINGS (CONT.)**

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- Call **911**, or transport the victim to a doctor or hospital if allergic reactions such as breathing difficulty, facial swelling, hives, nausea, or abdominal cramps occur

**1615 TICK BITES**

There are two ticks common to the Commonwealth of Kentucky: the American dog tick and the lone star (deer) tick. Both ticks are known to carry diseases harmful to humans. The American dog tick transmits Rocky Mountain spotted fever, while the lone star tick transmits Lyme disease.

➤ **To Avoid Tick Bites:**

- ◆ Wear light-colored clothing, hat, long-sleeved shirt, and long pants
- ◆ Tuck shirttail into pants, and tuck pant legs into socks
- ◆ Use insect repellents
- ◆ Check yourself, children (especially head), and pets for ticks after each outing

➤ **Treatment**

- ◆ With a gloved hand, grasp the tick with fine-tipped, pointed, non-etched, non-rasped tweezers, as close to the skin as possible and pull slowly
- ◆ If possible, save tick in tight container for identification
- ◆ Wash the bite area with soap and water

**DO NOT:**

- ◆ Attempt to suffocate or cover tick with butter, petroleum jelly, fingernail polish, ointment, gasoline, kerosene, or similar substance
- ◆ Burn with lighted cigarette or match





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**1701 GENERAL INFORMATION**

Blood-borne pathogens are small organisms present in the blood of infected people and frequently may cause disease. Hepatitis viruses and the human immunodeficiency virus (HIV)—the virus that causes acquired immune deficiency syndrome (AIDS)—are blood-borne pathogens.

An exposure control plan has been established for those employees who may have exposure to blood-borne pathogens. The exposure control plan attempts to minimize or eliminate occupational exposure to potentially infectious materials. The written plan lists various engineering and work practice controls as well as items of personal protective equipment to be worn. **Universal Precautions** shall always be adhered to when a potential exposure to blood or other potentially infectious material (OPIM) exists, this includes treating all blood and OPIM as potentially infectious and utilizing appropriate personal protective equipment.

The immediate supervisor, administrative manager, and the Employee Safety and Health Branch shall be immediately notified if an employee experiences an exposure event to blood or OPIM or be pricked or cut by a potentially infectious BBP object, such as contaminated broken glass or a needle. Medical attention shall be sought as soon as possible but not later than 24 hours.

BBP cleanup kits are required at all Cabinet facilities and shall be fully stocked. Only persons trained in BBP shall conduct cleanup operations. All first-aid responders shall be trained on BBP and the exposure control plan.

Replacement kits are available at equipment garages.

Additional information can be found in the applicable written *Blood-Borne Pathogens Exposure Control Plan* and the *Kentucky Occupational Safety and Health Standards* ([29 CFR 1910.1030](#)).



**1801 INTRODUCTION**

Lifting is so much a part of everyday jobs that most people do not think about it. It is often performed incorrectly, with bad results: pulled muscles, slipped discs, or hernias.

**1802 GENERAL INFORMATION**

- Injuries can be avoided when lifting occurs about the knees and below the shoulders. Working and storage surfaces should be designed and constructed at the appropriate level to encourage proper work posture and to avoid stooping, bending, stretching, turning, and reaching.
- Avoid storing heavy materials overhead when at all possible. Storage structures shall be secured and properly loaded to avoid tipping over or falling.
- Before lifting, take a moment to think about what you are about to do.
- Examine the load's weight and for sharp corners, slippery spots, or other potential hazards.
- Know your limit and do not try to exceed it. When a load cannot be safely handled by one person because of its excessive weight, bulk, or awkward shape:
  - ◆ Ask for help
  - ◆ If possible, divide the load to make it lighter or more manageable to carry

**Note:** Assistance or mechanical devices should be utilized when lifting loads greater than 30 pounds. Handling of heavy loads should involve the use of mechanical aids such as hand trucks, dollies, hoists, and other mechanical devices.

- Know the load's destination and make sure that it and the path of travel are both free of obstructions.
- Never carry a load you cannot see over or around.
- To change direction, turn with your feet. Do not twist body.

## 1803 LIFTING PROCEDURE

BEND YOUR KNEES



HUG THE LOAD



AVOID TWISTING



- Stand close to load with your feet spread apart about shoulder width, with one foot slightly in front of the other for balance.
- Squat down, bending at the knees (not the waist) while keeping your back straight. A straight back keeps spine, back muscles, and internal organs of the body in correct alignment. Straight does not necessarily mean vertical or straight up and down.
- The load should be drawn close to the body. Arms and elbows should be tucked into the side of the body. Grip object firmly with whole hand, not just fingertips.
- Tuck chin so neck and head continue the straight line of the back.
- Begin lifting slowly with your legs (**not your back**) by straightening them. Never twist your body during this step.
- Once the lift is complete, keep the load as close to the body as possible. As a load's center of gravity moves away from the body, stress to the lumbar region of the back dramatically increases.
- If you must turn while carrying the load, turn using your feet—not your torso.
- To place the load below waist level, follow the same procedures in reverse order. Remember to keep your back as vertical as possible and bend at the knees.



**1901 GENERAL INFORMATION**

All portable power tools shall be used in accordance with the manufacturer's recommended operating procedures. Only Cabinet-owned tools shall be used.

No portable electric tool shall be used if operator must stand or be located near water.

When using any portable power tool, operators shall wear all required personal protective equipment.

**1902 ELECTRICAL TOOLS****Grounding**

All hand-held portable electrical tools shall be grounded. The tool is grounded when **one** of the four following criteria is met:

- The tool has an approved double-insulated system.
- The tool has a three-wire and three-prong system.
- The wall receptacle has wiring in conduit, or the wiring is bonded to a grounded structure.
- The adapter has the grounding pigtail wire affixed to the wall receptacle faceplate screw.

Refer to **SAFE-1901**, "General Information" for general safety policies.

**Electrical Cords**

- Cords shall be replaced when insulation is worn or frayed. Cords shall not be left in walkways so as to create a tripping hazard. Cords shall be protected from grease and oil spills.
- Extension cords (drop cords) shall have wiring equal to the wiring of the tool being used with it and shall be of the grounded type when used with portable electrical tools.
- Wiring on plugs shall be covered with approved insulated discs.

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**1902 ELECTRICAL TOOLS (CONT.)**

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Refer to [SAFE-1901](#), “General Information” for general safety policies.

**Electrical Drills**

- Electrical drills shall have a constant pressure switch (on-off switch) and may have a lock-on control that can be turned off with the same finger or fingers that turned it on.
- When drilling loose pieces of material, the work shall be clamped in a vice or otherwise secured to prevent work from spinning.

Refer to [SAFE-1901](#), “General Information” for general safety policies.

**Electrical Circular Saws**

- Each saw shall be provided a constant pressure switch that shuts off power when pressure is released.
- Circular saws shall be equipped with guards above and below the base plate or shoe. The bottom guard will move freely as the stock is being cut. This guard shall automatically and instantly return to the covering position when the saw is withdrawn from the work. Operators shall not remove or block this guard in open position.

Refer to [SAFE-1901](#), “General Information” for general safety policies.

**Grinders and Disc Sanders**

- Grinders with abrasive wheels that exceed 2 inches in diameter shall have a protective hood or guard that will cover at least the top half of the abrasive wheel (180-degree coverage). Switches for grinders and disc sanders shall be of the “on-off” type only when diameters of abrasive wheels and discs are less than 2 inches.

**1902 ELECTRICAL TOOLS (CONT.)**

- Grinders and disc sanders with abrasive wheels and discs 2 inches or greater in diameter shall be equipped with a momentary contact “on-off” switch. The switch may be locked in the “on” position if the same finger or fingers can be used to turn it off.

Refer to [SAFE-1901](#), “General Information” for general safety policies.

**Portable, Abrasive Cut-off Saws**

- Shields covering cutting blade shall not be removed.
- Operators shall be aware of surroundings and keep all other personnel away from operation.
- Extra fuel shall be stored only in labeled, approved safety cans.
- All necessary personal protective equipment shall be worn by operators.

Refer to [SAFE-1901](#), “General Information” for general safety policies.

**1903 PORTABLE AIR COMPRESSORS**

- Portable air compressors shall have safety chains affixed to the tongue hitch for use with the vehicle towing the compressor. All compressed air-line couplings shall have a safety wire secured through the matching holes from one coupling to another to prevent separation of hose sections while under pressure.
- Personnel using compressed air for jackhammering, pavement breaking, etc. shall wear approved protective eye shields. Ear protection is required on personnel operating jackhammers and other persons within 25 feet of the air compressor or as indicated by sound meter readings.

Refer to [SAFE-1901](#), “General Information” for general safety policies.

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**1904 AIR-POWERED TOOLS**

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**Cleaning with Air**

- Compressed air pressure shall be reduced to 30 psi when used for cleaning purposes.
- Approved eye protection shall be worn by all employees exposed to flying particles.
- Compressed air shall not be used for cleaning clothes and parts of body.

**Air Hoses**

All sections of air hoses used with air compressors shall have couplings secured by a safety wire affixed in provided holes.

**Air-Powered Portable Grinders**

Air-powered portable grinders shall have the same guarding as electrical portable grinders.

**Jackhammers and Pavement Breakers**

Safety clips or retainers shall be provided to prevent attachments (bits, etc.) from being accidentally withdrawn or expelled. Personnel using these tools shall exercise particular care in the positioning of feet. Approved ear and eye protection is required during operation.

**Sandblasters**

The blast-cleaning nozzle shall be equipped with an operating valve that must be held open manually. Operator shall wear air-line respirator used with approved type of air compressor.

Refer to [SAFE-1901](#), "General Information" for general safety policies.

**1905 PORTABLE ELECTRIC GENERATORS**

The motor shall be bonded to the stand so that a good ground is evident. A heavy-duty copper wire shall be attached to the generator stand and attached to an appropriately sized ground rod driven into the ground. All portable electric tools (unless double-insulated) shall be the grounded type when used with portable electric generator. All portable electric generators shall be equipped with ground fault circuit interrupters.

Refer to [SAFE-1901](#), “General Information” for general safety policies.

**1906 OTHER POWER TOOLS****Chain Saws/Pole Saws**

- Chain saw/pole saw operators shall be aware of their surroundings. Firm footing shall be utilized at all times. Chain saws/pole saws shall be shut off before any adjustments are made. Chain saws/pole saws shall not be left unattended while running.
- Chain saws shall be removed from operation if the constant pressure switch, when released, allows the saw to continue to operate.
- Smoking is not permitted while operating a chain/pole saw.
- The chain saw/pole saw blade shall be covered when not in use.
- Chain saw gas mixture shall be stored in labeled, approved safety cans.
- All necessary personal protective equipment shall be worn by chain saw/pole saw operators. This includes, but is not limited to, chaps, eye protection, hearing protection, face protection, foot protection, and hard hats.

Refer to [SAFE-1901](#), “General Information” for general safety policies.



**1906 OTHER POWER TOOLS (CONT.)****Weedeaters**

- Shields covering the cutting blade shall not be removed.
- Operators shall be aware of surroundings and keep all other personnel away from operation.
- Extra fuel shall be stored only in labeled, approved safety cans.
- All necessary personal protective equipment shall be worn by operators.

Refer to [SAFE-1901](#), “General Information” for general safety policies.



**2001 LADDERS**

Ladders shall be well constructed, with the rungs inset in the side rails. The bottom of a ladder shall have rubber safety feet. Ladders shall be used in accordance with manufacturer's recommendations.

When ladders are positioned, they shall not be too straight or at too great an angle. The best angle is when distance from wall to base of the ladder is approximately one-fourth the length of the ladder. Ladders should always have firm footing and should be properly tied off with a rope or heavy string to prevent shifting. Only fiberglass ladders shall be used for repairs to electrical equipment or energized lines.

Ladders shall be stored away from traffic areas where damage or injury could occur.

All ladders used for access to overhead storage areas or roofs must extend at least 3 feet above the point of support.

Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.

**2002 SCAFFOLDS**

- Scaffolds shall be erected, moved, dismantled, or altered only under the supervision of the competent person.
- Scaffolds shall be constructed to support four times the maximum intended load.
- Scaffold platforms shall be at least 18 inches wide.
- Scaffolds shall be plumb and level.
- Working platforms shall be solidly planked.
- Planking shall be scaffold-grade lumber.

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**2002 SCAFFOLDS (CONT.)**

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- Free-standing scaffolds shall be anchored to the structure every 26 feet vertically and every 30 feet horizontally.
- Safe and convenient access shall be provided to the platform level by ladder, stair, or other recognized method.
- Scaffold suspension rope shall be free of splices and be capable of supporting six times the intended load.
- Catenary (picks), one-point or two-point suspension, and boatswain chair scaffolds that require fall protection shall be independent of the scaffold or scaffold supports.
- Persons working from scaffolds shall utilize a PFAS (see [SAFE-2400](#)) and comply with the written Fall Protection Program.



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**2101 GENERAL INFORMATION**

- Before excavation work begins, supervisors shall determine if underground utilities are located in the area (call "811").
- Any excavation greater than 4 feet deep shall be:
  - ◆ Provided with an adequate exit every 25 feet if employees are expected to enter
  - ◆ Tested for hazardous gases or oxygen deficiency if such conditions are likely to exist
- Any excavation greater than 5 feet deep shall:
  - ◆ Meet the conditions for an excavation greater than 4 feet deep (see above)
  - ◆ Have an adequate means of protection
  - ◆ Be inspected prior to and during the work shift by a competent person

**Note: Only someone receiving special training, having experience in the field with the ability to recognize potential hazards, and having the authority to correct hazards or abate operations shall be qualified as a competent person.**

- Sloping shall be as follows:
  - ◆ Type A soil,  $\frac{3}{4}$  to 1 (53-degree angle)
  - ◆ Type B soil, 1 to 1 (45-degree angle)
  - ◆ Type C soil,  $1\frac{1}{2}$  to 1 (34-degree angle)
- Most soils in Kentucky are classified as "C."
- The competent person shall be on site at all times when employees are in the excavation and shall have the authority to stop work if hazardous conditions are detected.
- Employees shall not work under loads being handled by excavating or lifting equipment.

**2101 GENERAL INFORMATION (CONT.)**

- If employees enter the excavation, both the removed soil and other work material shall be stored at least 2 feet from the edge.
- If a trench box, shoring, or other protective system will be used, information on the installation, use, placement, and removal shall be kept on site.
- If sloping at an angle of 34 degrees is chosen as the protective system, the soil does not have to be classified, but the other requirements shall still apply.
- Trenches or excavations left open overnight shall be barricaded, fenced, or otherwise protected.



**2201 GENERAL GUIDELINES**

- Employees shall survey the area for overhead and underground lines before work begins (call "811").
- The supervisor shall contact the power company in advance when lines are too close to work safely or exact location of underground lines is unknown to have the lines disconnected, de-energized, or properly protected prior to work beginning.
- Employees shall use the following table to determine minimum clearance distances while working near distribution lines:

<b>Normal Voltage (Phase to Phase)</b>	<b>Minimum Required Clearance</b>
600 to 50,000 volts	10 feet
Over 50,000 to 75,000 volts	11 feet
Over 75,000 to 125,000 volts	13 feet
Over 125,000 to 175,000 volts	15 feet
Over 175,000 to 250,000 volts	17 feet
Over 250,000 to 370,000 volts	21 feet
Over 370,000 to 550,000 volts	27 feet
Over 550,000 to 1,000,000 volts	42 feet

Under the right conditions, electrical current can arc through the air to an equipment boom or other ground. Never work near live distribution lines or electrical circuits. The power company, shall be notified, and shall do **one** of the following prior to work commencing:

- Disconnect or remove the distribution line.
- De-energize the distribution line.
- Guard the distribution line by insulation sleeves.

Cabinet employees **shall never** remove any objects contacting live distribution lines.



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**2301 CONFINED SPACE ENTRY**

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A confined space is large enough and so configured that an employee can bodily enter and perform assigned work but has restricted means for entry and exit and is not designed for continuous occupancy. Common types of confined spaces include, but are not limited to, storage tanks, boilers, silos, vessels, underground vaults, manholes, sewers, trenches, ditches, and pits.

Employees shall not enter a confined space without appropriate training and shall do so only in accordance with the Cabinet's confined space program.

**2302 PERMIT REQUIRED**

A confined space that has a risk of exposure to serious hazards—such as asphyxiating atmosphere, engulfment, entrapment by internal configuration, hazardous atmosphere, or any other serious safety or health hazard—becomes a “permit required confined space” (PRCS). If a PRCS exists, a detailed written procedure shall be established outlining safe entry, exit, and rescue procedures. A written permit shall be completed, approved, and filed. Duties for entrants, entry supervisors, standby attendants, and rescuers shall be developed and practiced. Typical equipment used by a confined-space team includes, but is not limited to, direct-reading atmospheric monitoring/measuring instruments, alarms, ventilation blowers, self-contained breathing apparatus or respirators, full-body harnesses, and winches.

Because of the inherent dangers of a PRCS, a confined-space team shall be well equipped and highly trained and shall practice proper procedures on a regular basis.



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**2401 GENERAL REQUIREMENTS**

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- All employees who might be exposed to a fall hazard shall receive initial training and refresher training as needed.
- All employees exposed to a possible fall to the ground or lower level of 4 feet or more shall be protected by OSHA-standard guardrails, safety nets, or personal fall-arrest systems (PFAS).

**Note:** Portable step and extension ladders are exempt from PFAS requirements.

- **Guardrail systems** shall be used as the primary engineering controls to protect employees from fall hazards. Standard guardrails shall have a 42-inch toprail (+ or – 3 inches), midrail, and 4-inch toeboard (if there is a danger of falling objects). Guardrail strength shall support at least 200 pounds of force.
- **Safety nets** for (personnel or debris) shall be used when work surfaces are more than 25 feet above the ground, water, or other work surface, where the use of ladders, scaffolds, temporary floors, lifelines, or harnesses is impractical.
- **Personal fall-arrest systems** (PFAS) shall be utilized for fall protection when guardrail or safety nets are not feasible. The most basic PFAS shall consist of an anchor point (5000#), lanyard, ANSI-approved harness, and connectors. All components shall be connected for tie-off.
- All employees shall be protected when engaged in covered work at heights greater than 4 feet to include, but not limited to, inspection of work on elevated work surfaces, platforms, lofts, decks, floor holes, stairs, tanks, bridges, leading edges, pick boards, one- and two-point suspension scaffolds, scaffold tower construction, fixed ladders in excess of 20 feet, crane booms, excavations or trenches, aerial lifts, ramps, bucket trucks, snoopers, man baskets, radio or microwave towers, roofs, cliffs, rock ledges of roadway cuts, or any other areas where there is moving machinery or other hazards below the work area.



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**2401 GENERAL REQUIREMENTS (CONT.)**

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- All employees working over or near water, where a danger of drowning exists, shall wear a Coast Guard-approved life jacket. A life jacket is **not** required if the personal fall-arrest system maintains through design a 100 percent tie-off rule (double-legged lanyard).
- All employees using a PFAS shall:
  - ◆ Be trained on the proper use, limits, and maintenance of the PFAS being utilized
  - ◆ Limit the free-fall distance (through rigging) to a maximum of 6 feet
  - ◆ Be tied off (connected)
  - ◆ Inspect harness, lanyard, connectors, and anchor **daily** before use
  - ◆ Use compatible components
  - ◆ Follow the manufacturer's recommended instructions for each system component for use
  - ◆ Have their personal fall arrest devices inspected annually by a competent person
  - ◆ Protect safety lines, ropes, and lanyards against cuts, abrasions, or other substances or environmental factors that may degrade the integrity of the material

